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Canadian Railway and Marine World

GENERAL INDEX

FOR 1913.

ACTON BURROWS LIMITED, PUBLISHERS
70 BOND STREET, TORONTO, CANADA

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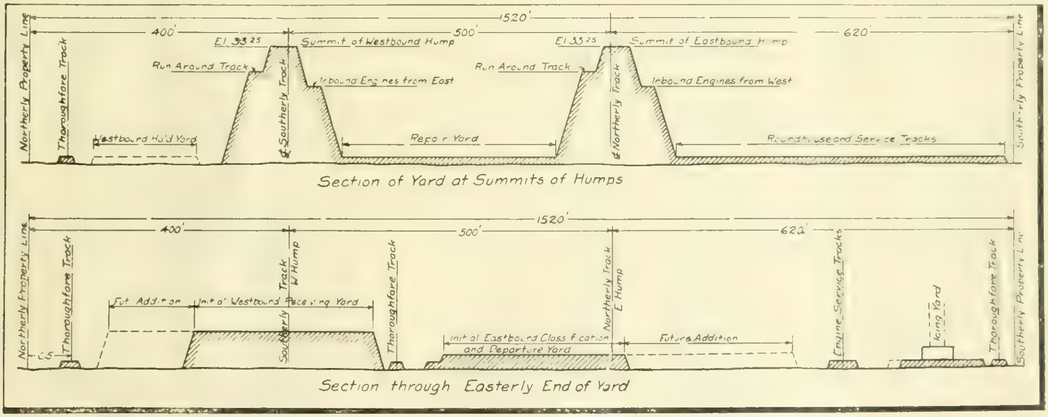
Canadian Railway and Marine World.

January, 1913.

Canadian Pacific Railway Clearing Yard at North Transcona, Man.

The C.P.R. has in course of construction at North Transcona, 6 miles east of Winnipeg, what will probably be one of the largest and most complete clearing yards on the continent, having an ultimate capacity when developed to the extent laid down in the present layout, of over 12,000 cars. The accompanying illustrations show the layout, profile and cross sections.

The yards are situated a short distance beyond the point where the Molson cut off branches from the main line via East Selkirk at Whittier Jct., these two lines forming the west and east boundary lines of the property respectively, the Canadian Northern Ry. Birds Hill branch crossing the Molson line at the eastern extremity of the yard. The grounds lie almost due east and west. Along the north and south sides there is a thoroughfare track for through freight traffic, clear of the several yards.



Cross Sections of the Yard Through the Humps and Through the Easterly End of the Yard.

The yards are divided into two grand divisions—the major and the minor yards. The major yards, consisting of the eastbound receiving yard, the westbound classification and departure yard, the eastbound classification and departure yard, and the westbound receiving yard, are each large yards symmetrically arranged about a central line through the summit of the humps, facilitating access to all parts of the grounds. The minor yards, consisting of the various auxiliary yards that are necessary to a terminal, such as hold yard, caboose yards, etc., are distributed to excellent advantage in the spaces between the four major yards, making a layout that is remarkably compact.

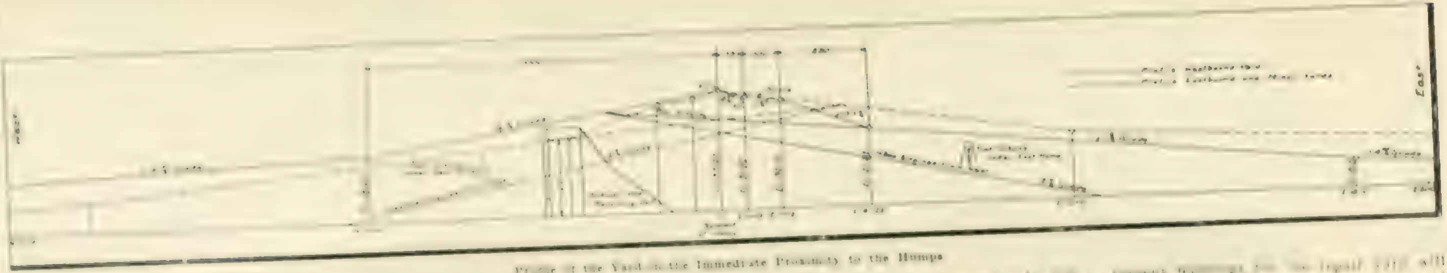
The yards have been designed to relieve the company's large Winnipeg yards, which are said to be the largest in the world, but which, from the rapidly increasing traffic, principally in grain, have become so overcrowded as to demand increased facilities. The ultimate development not being required at once, it is planned to construct only about half the layout proposed, the part at present under construction being shown in the three section plan of the grounds, in full lines; the ultimate expansion is indicated by the dotted lines. It will be noted that the layout is such that the part under construction at present is compact, and the future construction will add to the yard in such a manner as to be an outward extension, and not an internal rearrangement, the additions being along the outer edge of the several major yards.

Traffic from the west will come out from Winnipeg through Whittier Jct. and to the yards, over the main line, branching off into the yards at their west end, three tracks leading in. Parallel to these entry tracks, it is the ultimate intention to construct a 16 track grain yard, with a capacity for 730 cars to form part of the eastbound hold yard. The entry tracks lead into the eastbound receiving yard, which will eventually contain 4 tracks for 100 cars and 26 tracks for 65 cars, a total capacity of 2,090 cars. Only the northern portion of the yard is to be constructed at present, giving a capacity of 1,440 cars. From this yard, a double ladder converges to a double track over the eastbound hump to the eastbound classification and departure yard, which will have 8 tracks for 100 cars and 32 tracks for 65 cars, a total capacity of 2,880 cars. The initial construction only calls for a capacity of 1,440 cars. The eastbound classification and departure yard converges on double ladders out to the Molson line, and thence east, striking the main line at Molson. The Molson line is a cut off from the main line, practically an air line between Winnipeg and Molson on the original main line, whereas the latter makes a wide detour around by East Selkirk.

The westbound receiving yard, entered from the Molson line to the north of the eastbound classification and departure yard, is to have 4 tracks for 100 cars, and 26 tracks for 65 cars, or a total capacity of 2,090 cars, this yard being almost identical in layout, and the same in capacity as the similar yard for eastbound traffic. The initial development is to be for 1,440 cars as in the other yards. This yard will lead over a double track hump through a double ladder, leading out over the hump into the westbound classification and departure yard, which is to have 4 tracks for 100 cars, and 36 tracks for 65 cars, giving a capacity of 2,740 cars. The present layout calls for 1,440 cars capacity, making the initial development of all the major yards the same. The westbound classification and departure yard leads out to the north of the grain yard, to the main line, through Whittier Jct. to Winnipeg.

At a central point, opposite the humps, the plan calls ultimately for two roundhouses of 55 stalls each. At present, only 44 stalls of the easterly one is under construction. These roundhouses are to be of the latest C.P.R. standard construction. The outside diameter will be 425 ft., and in the centre there will be a 100 ft. turntable. Between the two roundhouses, which back up to each other, with an intervening space, there will be the usual roundhouse auxiliary buildings, including power house, small machine shop, and storehouse and office building. There will also be a 100,000 gal. tank between the two roundhouses. It is the intention to connect the two roundhouses by means of a through track between the buildings, through the rear walls. The layout of the two roundhouses as regards approach arrangements and service track facilities is to be identically the same, one lying to the east and the other to the west. The immediate yards under construction belong to the easterly roundhouse.

From the roundhouse will be two tracks, branching out to a series of service tracks. Two pairs of parallel tracks will run over cinder pits. To the east of that again will be a coaling pocket, beyond which will be two inspection pits, each with two pairs of tracks. To the south of this point will be a sand house. Beyond this point, the service tracks will converge to a single track, Paralleling this converging track will be an



Profile of the Yard in the Immediate Proximity to the Humps

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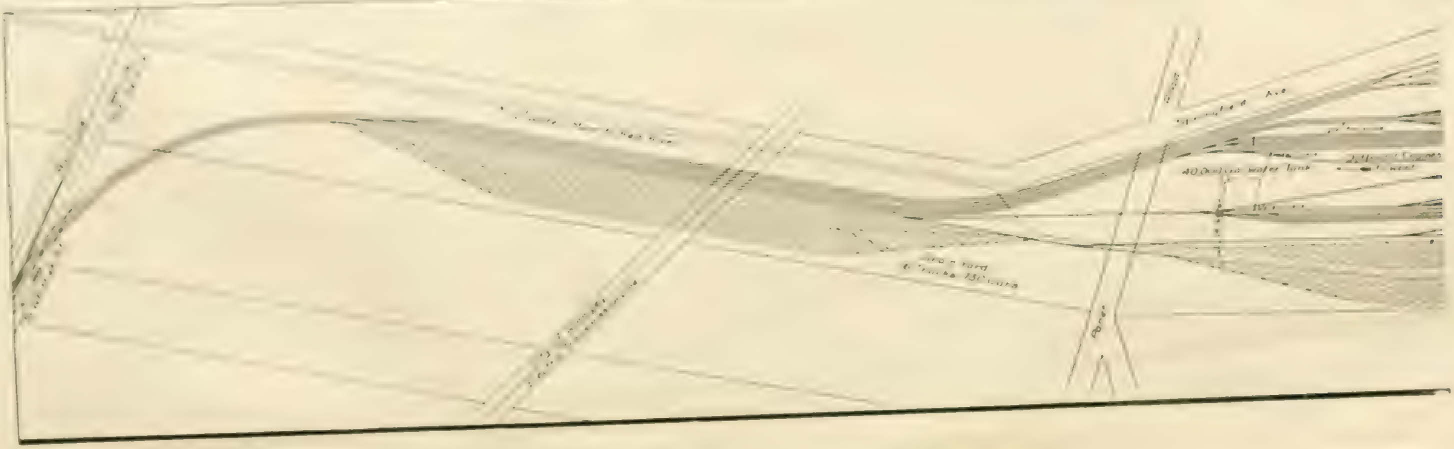
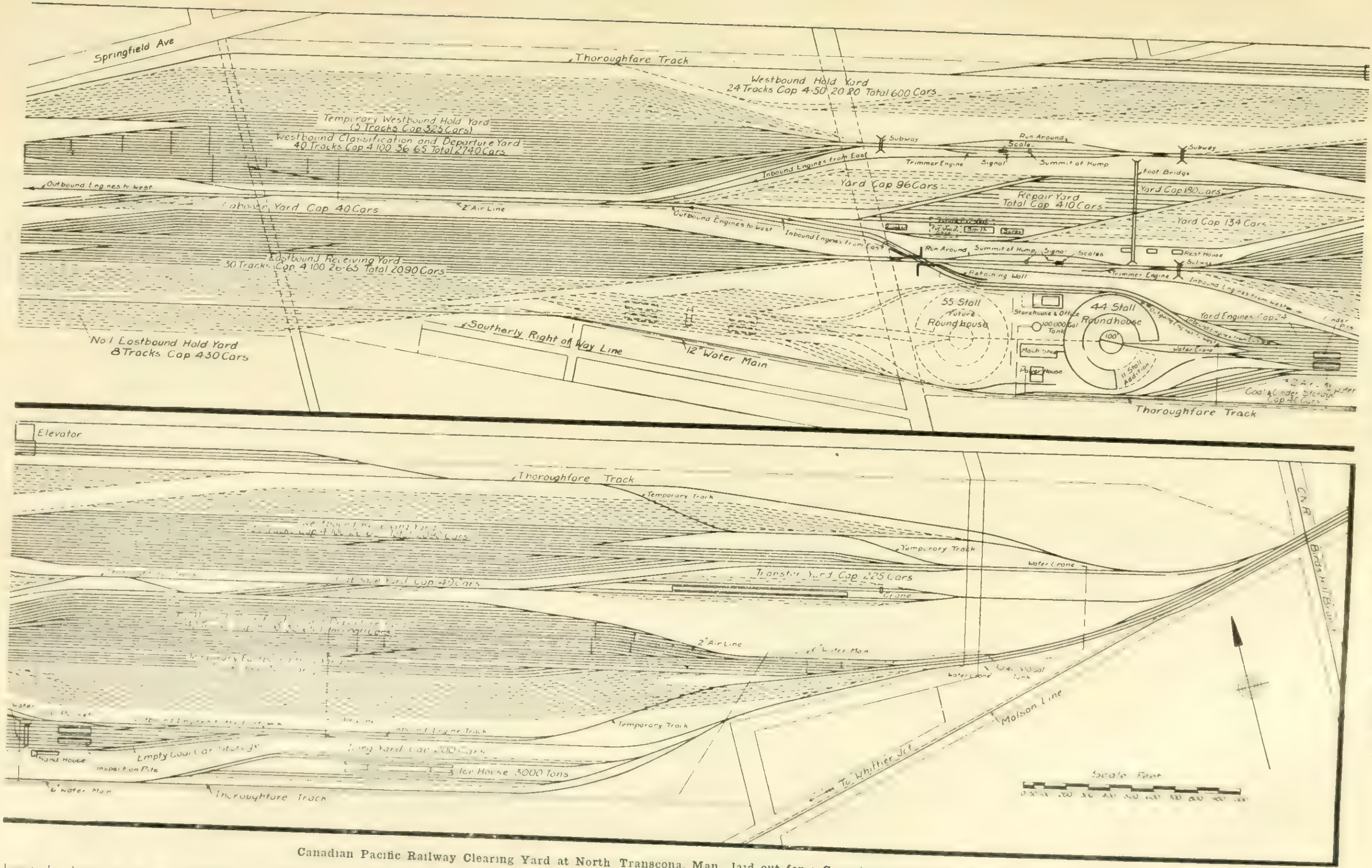




Canadian Pacific Railway Clearing Yard at North Transcona, Man., laid out for a Capacity of over 12,000 cars.

located, there is to be a 225 car transfer yard to contain 4 tracks each side of a central platform. The present development only plans to lay 4 of these 8 tracks, giving a capacity of 125 cars. Near the east end of this yard is a double track crane.

An icing yard, similar in many ways to the transfer yard, will be located immediately to the south of the eastbound classification and departure yard, close to the southerly thoroughfare track. This yard will contain 6 tracks, 3 on each side of a 3,000 ton ice house, to have a capacity of 200 cars. The initial development is to be 4 tracks, with a capacity of 140 cars.

A temporary eastbound hold yard will be located in the undeveloped section of the eastbound classification and departure yard, having 5 tracks with a capacity of 325 cars. Part of the main eastbound hold yard will be to the south of the southerly thoroughfare track, containing 8 tracks with a capacity of 430 cars. This, with the grain yard, is to be completed later.

The two caboose yards, one for eastbound and the other for westbound traffic, will be very conveniently located, between the adjacent receiving and the classification and departure yards, the tracks at an angle to the main direction of movement, so that the through tracks will form the ladders for the short tracks of the caboose yards

[illegible]

Police Force on C.P.R. Western Lines.

[illegible] to the [illegible]

[illegible] him [illegible]

[illegible]

A GENERAL PASSENGER AGENT'S TRIBUTE

[illegible]

[illegible] title [illegible] have [illegible]

[illegible] the work of [illegible]

[illegible] into four divisions, to correspond with the railway [illegible] general superintendent of the division. The chief inspector and the two inspectors [illegible] years of [illegible] sergeants in the Imperial army, and all under the general supervision of the chief [illegible]

The first duty to which a new man is [illegible] be directly under the eye of the chief of the department until he has become grounded in the work that is expected of [illegible] of complying with the cardinal principles [illegible] sobriety, cleanliness, after which he is [illegible]

[illegible] tinction. It is a design selected by the Vice President. So well has it been received that there have already been requests from other railway officials for the pattern. [illegible] plimented the Vice President on the excellence of the C.P.R. police, and recog[illegible] in service in the Imperial army.

The police force of the C.P.R. western lines is something to be reckoned with. It has all the powers of the regular police in the territory in which the road operates, the men are schooled in rendering all the help in their power to preserve peace in that territory. They have come to be [illegible] Dominion, city and provincial police, and [illegible] unit of Imperial defence.

Poles Bought in Canada in 1911

[illegible] At present [illegible]

Canadian Northern Railway Locomotive and Car Shops at Winnipeg.

By Frederick H. Moody, B.A. Sc.

The last issue of Canadian Railway and Marine World contained a very full description of the C.N.R.'s locomotive department at its Fort Rouge shops, Winnipeg. This present article completes the description of the entire shops:—

CAR DEPARTMENT.

The transfer table running east and west across the shop property forms the divisional line between the locomotive and car departments, and is the means by which the passenger cars are placed on the tracks running into the passenger car shop from the north, the cars coming on the transfer table from either the north or south over the through running track along the east side of the grounds. There are also five approach tracks into the car shop from the south, which allows of cars being placed in shop independent of the transfer table.

The General Car Foreman is A. McCowan, whose office is located in a central position at the foot of the next street south of the Superintendent of Rolling Stock's office, convenient to all parts of the car department buildings and grounds. The buildings in the car department group comprise the passenger car shop, freight car shop and planing mill, in addition to the several small buildings at the south end of the grounds, made use of by those working on the freight car repair tracks. From the nature and greater volume of the work handled, and also from the fact that the greater portion of the work can be handled in the open, more than two thirds of the shop grounds are occupied by the car department, as a survey of fig. 1 will indicate.

THE PASSENGER CAR SHOP, figs. 17 and 18, T. Hammill, Foreman, is the newest building of the group, the present freight car shop having until within a couple of years ago served the double duties of freight and passenger car shop. It is a brick structure, similar in general design to those of the locomotive department, 201 ft. long from north to south, and 154 ft. wide. In width, there are seven 22 ft. bays, all but the east having a through track. Over all but the outer bays there is a skylight 132 by 12 ft., located centrally over the roof, which slopes from the centre, north and south, from a clear height inside of 27 ft., to one of 20 ft. at the end walls. There are five rows of steel columns down the length of the building, built up of two 8 in. channels and two 10 by ¼ in. plates supporting 9 in. cross I beams, between which are 20 in. I beams carrying the roof stringers. The steel columns are carried on step concrete footings, 6½ ft. deep and 5 ft. square at the base, the wall abutments at the corresponding points extending to the same depth, with a width at base of 4 ft. 5 ins., and a length of 10 ft. 2 ins.

The shop floor is planked throughout, with the surface skimmed level with the top of the rail, and resting on 4 by 6 in. sleepers at 4 ft. centres. At a distance of 2¼ ft. each side of the rails, there is embedded a 12 by 12 in. cedar jacking beam, centering directly under the side sills of cars for jacking up.

As fig. 18 shows, there is a convenient system of movable platforms attached to posts braced from the shop columns, for convenience in working on the sides of the cars. Every track in the shop has a similar set along each side.

The full width of a bay along the east side of the shop, there has just been completed a gallery at a height of about 10 ft., carried on 12 in. I beams from column to column, and across from the columns to the east wall. The gallery is approached from either end by stairs.

Commencing from the south, along the east wall of the shop, there is first a walled in room for the lavatory. Along the outside of the north wall of this room, one of the gallery stairs is located, and backing against these stairs is a sash rack, with a similar rack parallel to it a few feet further along. Between these two sash racks are five benches for finishing work, such as pumice stoning and varnishing the sashes, which on completion are slipped into the racks mentioned. This section of the shop

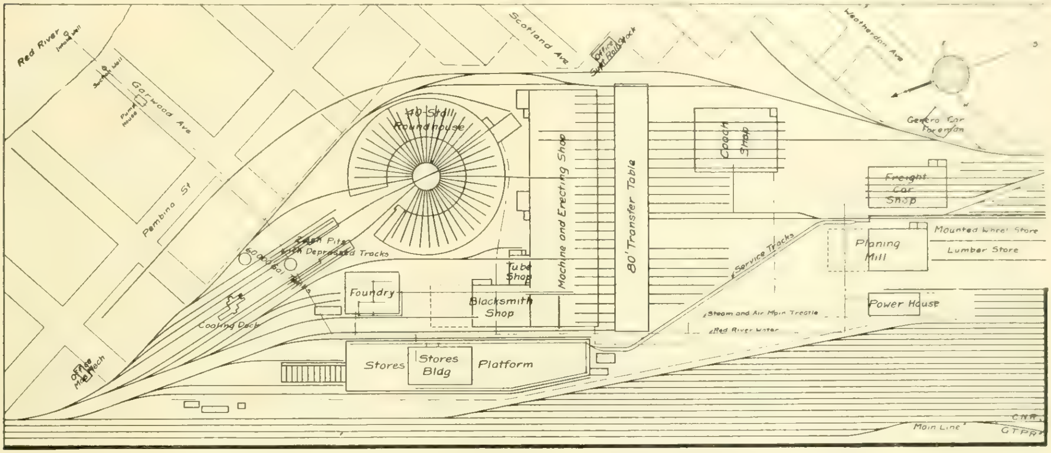


Fig. 1. Section 1.—Layout of C.N.R. Fort Rouge Shops—North End.

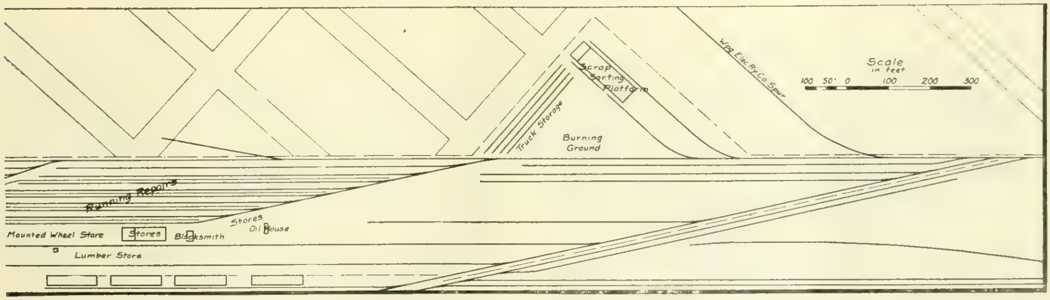


Fig. 1. Section 2.—Layout of C.N.R. Fort Rouge Shops—South End.

along to the side door has a cement floor, with a moulded gutter along the wall for draining off the cleaning water.

North of the sash finishing section is the glazers' department, provided with a 20 compartment glass rack, carrying all sizes of standard glass. One end of the glass rack forms a trimming table. Along towards the door against the wall there is a double 8 by 3½ ft. vat for washing and scouring window sashes, doors, etc., preparatory to pumice stoning and varnishing. This vat has steam and water connections for providing warm scouring water. The vat adjoining, beside the door, is a tank 2½ by 3½ ft., and is used for dyeing cushions, covers, and such other material that requires renovating. This vat is also provided with hot and cold water connections.

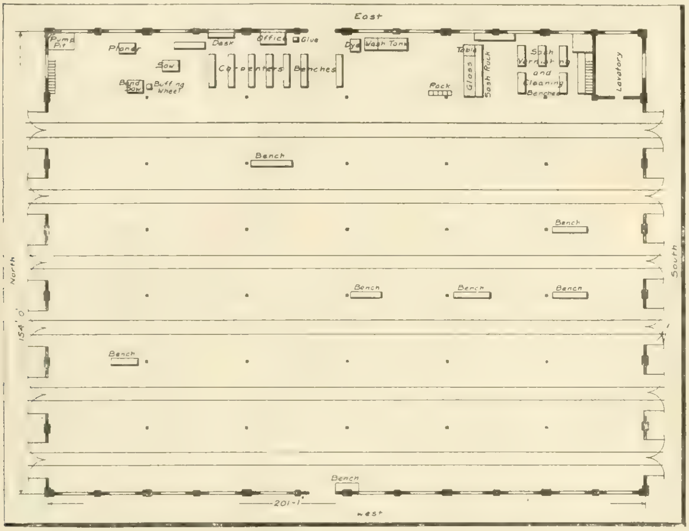


Fig. 17.—Interior Layout and Machine Distribution in Passenger Car Shop.

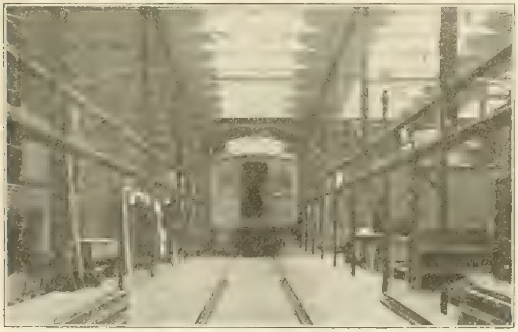


Fig. 18.—Arrangement of Track in Passenger Car Shop.

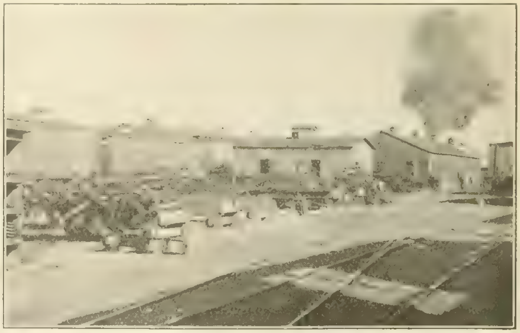


Fig. 19.—Freight Car Repair Track Buildings and Stores.

The foreman's office adjoins the side door of the building, and opposite this office is a row of seven carpenters' benches for car work. The passenger car shop woodworking department is at the north end, and contains a circular saw, planer, bandsaw, and buffing wheel, all operated from shafting below the floor, driven by a 15 h.p. motor, which is also under the floor.

At different points in the shop, between the tracks, there are permanent benches for carpenter and pipe work, and in addition there are several movable benches, which can be moved about to the most convenient point with regard to the work. A service track runs across the shop at the centre from the side door, over which the material from the stock piles and stores department can be brought into the shop.

The upholstering department occupies the greater portion of the new gallery along the east side, this department having been recently moved from a smaller gallery in a corner of the freight car shop, which, as previously mentioned, was formerly the passenger car shop. The new location provides much needed additional space. The department is provided with all the usual car upholstering shop equipment, and is located in a good position for the convenient handling of the work.

The north end of the gallery, with a separate stairway leading thereto, houses the dipping department. Owing to the nature of the work, that portion is provided with a cement floor, which will hold the drippings. This department has a steam heated lacquer oven 6 ft. long, 2½ ft. deep, and 4 ft. high; an oxidizing barrel; a 20 gal. jar of spent acid for preliminary pickling of new brass; three compartment washing tank, fitted with steam and water connections; 5 by 3 ft. lye vat; 20 gal. acid jar; and a 30 gal. potash jar. There are also work benches and a deep storage rack for finished and unfinished work.

The heating system of the whole shop corresponds to that of the other shops, there being 16 coils of 1½ in. pipe, banked along all sides between the doors and windows. Live steam is brought to the passenger car shop through a 6 in. main, paralleling that to the locomotive shop part of the way, and branching off at right angles to the passenger car shop as shown in fig. 1, coming into the latter at the southwest corner of the building. The condensation from the building heating system drains into a vacuum pump in a pit at the northeast corner of the building, the water being elevated thereby to a storage tank in a skylight, from which it is drawn off as desired for the washing and scouring requirements. Air is supplied the shop through a 2 in. main from the power house, paralleling the steam main.

The possibility of passenger car shop expansion is well shown by an inspection of the grounds plan, fig. 1. An extension to three times its present size is possible by knocking out the west wall and extending in that direction. Such a course is at present in contemplation.

THE FREIGHT CAR SHOP, T. A. Nelson, Foreman, to the south of the passenger car shop, as will be noted in the plan, fig. 1, is 192 by 100 ft., similar in design in most particulars to the passenger car shop, the freight car shop having served as the passenger car shop before the latter was constructed, as previously noted. Fig. 20 is a plan of the shop, and figs. 21 and 22, views along the south and east walls respectively, from the cab department in the southeast corner of the building.

There are three longitudinal bays in the shop, each 33 ft. 4 ins. wide, down the central one of which there are two tracks leading in from the north of the building, and one in each of the side bays, alongside the bay dividing walls, leaving a clear space along the side walls of the building for the machinery and work benches.

The walls and columns are carried on step footings at a depth of 6 ft., the bottom step of those at the wall being 4 ft. 8 ins. wide, and for the columns, 5 ft. square, of concrete. The brick walls are 16 ins. thick, and contain windows of ample proportions to give a well lighted interior, in conjunction with six cross skylights in size, 48 by 12 ft., located at 24 ft. centres, centrally in each of the 8 sections into which the shop is divided, excepting the end ones.

The roof columns are of steel, built up of two 8 in. channels and two 10 by ¼ in. plates, the clear height under the centre bay cross beams being 22 ft., the side bay beams sloping off to a height of 20 ft. The cross beams are 20 in. channels, on which rest the roof stringers. The slope of the roof is uniform, from the centre over the middle bay to the outer edge of the building.

The store room for the car department is in the small building adjoining the shop, at the southeast corner, the structure having originally been intended for the fan room, when the original intention had been to have the shops air heated. Adjoining this building, in a room of similar size, is located the lavatory, with the usual conveniences.

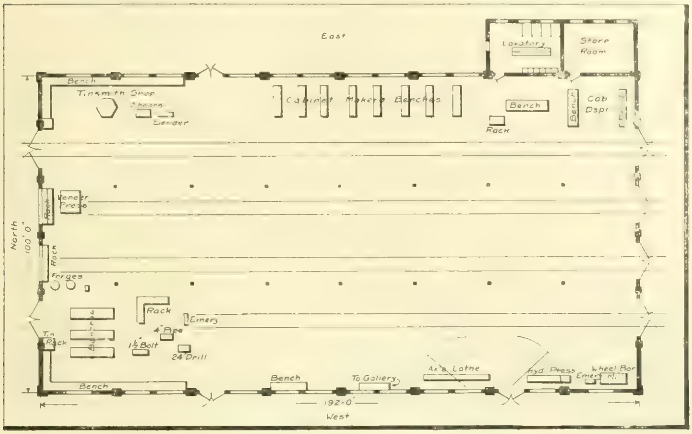


Fig. 20.—Interior Arrangement of Freight Car Shop.

The cab department occupies the southeast corner of the building. All the cabs now made on the C.N.R. are standard in design, and the parts, as made up in the mill, are assembled here into the completed cabs, which are stored just outside the shop, along the south boundary fence of the grounds, where they are conveniently located for loading on flat cars on the through running track, for removal to divisional points. The benches in the cab department are for fitting, one cab at a time being assembled in the space between these two benches.

Fig. 21.—South Side of Freight Car Shop.

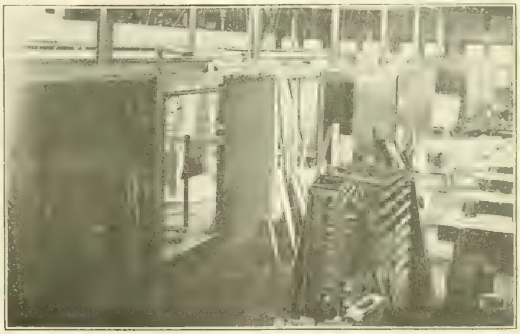


Fig. 22.—East Side of Freight Car Shop.

As a reminder of the time when the passenger car work was also handled in this shop, there is a row of 8 cabinet makers' benches along the east wall, where all the passenger car cabinet work is still handled, owing to lack of space in the passenger car shop. These benches are shown along the right edge of fig. 22, the rack in the foreground being for the storage of sash, etc., while undergoing refinishing by the cabinet makers. The work is brought from the passenger car shop and returned on completion.

Further along the east wall of the shop, in the northeast corner of the building, is the tinsmith shop, where all the tinwork for both the car and locomotive departments is handled. The larger tools here found include shears and sheet bender, and on the edges of the hexagonal table shown are the smaller tinworking tools to be found in well equipped shops. All repairs to such parts as headlights, etc., are here handled

In the northwest corner of the building is the car pipe fitting department, equipped with a 4 in. pipe machine, a 24 in. drill, 1½ in. bolt machine and an emery wheel. On the benches in the department are the various pipe tools required, and the benches are also fitted with pipe vises and ordinary vises. There are also two forge fires and an anvil for light forgings and bent pipe work. The rack, centrally situated in the department, carries the necessary pipe stock.

Over this northwest section of the shop there is a small gallery to be seen in the left background in fig. 22, and approached by a stairway along the side of the west wall. This gallery formerly contained the upholstering department, which has since been moved to the new gallery in the passenger car shop as mentioned before. Its future use will probably be for storage purposes.

The wheel and axle department occupies the whole of the southwest corner of the shop, as shown in fig. 20 and the foreground of fig. 21. To the north of the entry door in the west wall there is an axle lathe, and on the other side of the doorway an hydraulic wheel press. Next to this is an emery wheel, and in the corner a car wheel boring mill. This equipment, provided with the two jib cranes, is in a position to handle to good advantage large quantities of wheels, both for repair work and renewals.

The mounted wheel storage tracks, of which there are three, about 300 ft. long, are located to the south of the mill, which is directly to the west of the freight car shop. Wheels from and to these tracks pass into the freight car shop through the side door, the practice being to keep one track for mounted wheels that need renewal, and the other two for wheels that are ready for shipment or use in the shop. The convenient location of the wheel storage tracks to the freight car shop is apparent. A large part of the wheel renewal work is done directly, without the use of the wheel storage tracks. The car carrying the mounted wheels to the freight car shop from outside points on the system, for renewal, is brought up alongside the freight car side door on the track running down through the yards, where a yard crane, on a track adjoining, lifts them off to the planked space outside the door, and they can then be run into the shop without first placing in the storage space.

The freight car shop, on its four tracks, only has a capacity of about 15 cars, mostly for heavy repairs, rebuilding, and new rolling stock, such as cabooses, which the company builds in its own shops. The majority of the repairs are handled in the running repair, or rip tracks, directly to the south of the freight car shop. Here there are 8 tracks about 1,200 ft. long. These yards are under the charge of P. A. Musgrave, Foreman.

By a system devised by Mr. McGowan, the rip tracks are divided into sections, with different nature of repairs allocated to each. The nature of the repairs is divided into three general groups—heavy, medium and light—the car inspector in the receiving yards looking over the cars as they come into the yards, and labelling them with cards bearing in large red letters, H, M, or L, the yard locomotive switching the cars on their respective tracks at night, everything being in readiness on the commencement of work in the morning.

Between every second rip track there is a narrow gauge service track, similar to that in use in the locomotive department. These service tracks lead on to a common ladder at the north end, passing along between the freight car shop and mill, crossing over the yard track between the buildings by means of two small turntables, the service track being double tracked from that point across the space intervening between the locomotive and car departments, to the stores building, from which all the stores required by the car department are brought across with the least effort, and placed where required in the rip track yard.

Along the south side of the rip track yard are the various buildings belonging to that section of the work. This includes a combined stores and office building, blacksmith shop and oil house, as shown in fig. 19. The stores building carries all the local stores for the rip tracks, drawing from the main stores. The blacksmith shop is, of course, quite small, and handles only light work, such as repairing bent truss rods, etc. Along the ladder track in front of the oil house, as shown in the foreground in fig. 19, there are racks for carrying the larger car stores, including brake beams, and similar members. Reclaimed parts from the scrap sorting yard are also brought here if they appear to be within easy repair, and put in shape by the local blacksmith.

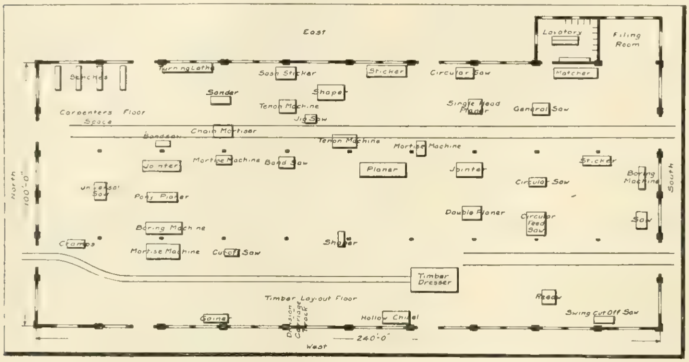


Fig. 23.—Interior Layout and New Machine Distribution in Mill.

All the wrecked cars and scrap car stock of all kinds, as brought in from the line on flat cars, is sorted over in a special yard at the southerly end of the grounds. Two tracks lead into this section from the easterly running track, on the southern one of which the flat cars carrying the wrecked material are placed. Between the two tracks is a platform at the car level, on which the scrap material is unloaded from the cars, and sorted there, the scrap parts being dismembered at the same time. On the track at the other side of the platform there are spotted several cars on which the different materials are loaded as sorted, each separate material on its own car, simplifying the operation of sorting scrap, and making it unnecessary to rehandle after sorting. In a small building at the north end of the platform are housed a bolt threader and shears for reclaiming bolts and cutting up scrap.

To the west of the platform, on an open piece of ground, is located the burning ground, where wrecked parts of cars are burnt away from iron members which it is desired to separate for the scrap piles. To the north of this are four tracks, on which are stored the trucks reclaimed from wrecks, the missing members for which are here fitted from less serviceable trucks, a considerable store being accumulated from time to time, which prove of value in car repair work, and in the building of certain new cars, such as cabooses.

THE PLANING MILL, J. E. M. Firby, Foreman, is located in the building directly to the west of the freight car shop, as shown in fig. 1. In common with the other shops of the plant, it has become so overcrowded that an extensive addition has recently been added. The plan of the shop, as extended with the proposed arrangement of the machine equipment, is shown in fig. 23; the interior arrangement prior to the addition, is to be seen in fig. 24, in which the crowded nature of the interior is shown.

The construction of the shop is identical in all details with the blacksmith shop, a description of which was given earlier, and to which the reader is referred. The building, as extended, is 240 by 100 ft., the addition being to the north, as shown in fig. 1. While this addition increases the length 96½ ft., there is still ample room for an increase in length of more than double the new length.

The interior arrangement of the machine tool equipment has been well thought out. It will be observed that the heavier equipment is along the west side of the shop and the lighter along the east side, with the machinery arranged in each case to form a steady forward movement from the south to the north end of the shop. Take, for instance, the path of car sills as they enter from the south; after laying out just inside the south door on the west side, they pass first to the swing cut off saw, from which, on a roller carriage track, they pass to the hollow chisel and the gainer, coming out completed as far as the principal operations are concerned.

Near the entry door there is a resaw, beyond which there is a timber dresser, fed from a standard gauge track leading in from the south end of the shop from the timber storage piles, located to the south of the shop in the position shown in fig. 1. The finished lumber is drawn off on a service track leading out from the north end of the building.

The other machinery in the building is arranged in the best possible manner to give a good layout. The balance of the equipment is as follows: Shaper, cut off saw, mortise machine, veneer cramps, boring machine, pony planer, universal saw, jointer, band saw, lathe, sander, chain mortiser, mortise machine, band saw, jig saw, tenon machine, sash sticker, shaper tenon machine, planer, mortise machine, sticker, circular saw, single head planer, jointer, double planer, circular feed saw, circular saw, general saw, matcher, sticker, boring machine and saw. These are given in the order in which they appear, proceeding along the west side from the south, and thence around the shop. In the southeast corner of the shop is a small building adjoining, where the saws are kept in repair, the room being equipped with various saw sets and filing machines. The pattern shop is arranged in a gallery in the northeast corner of the shop.

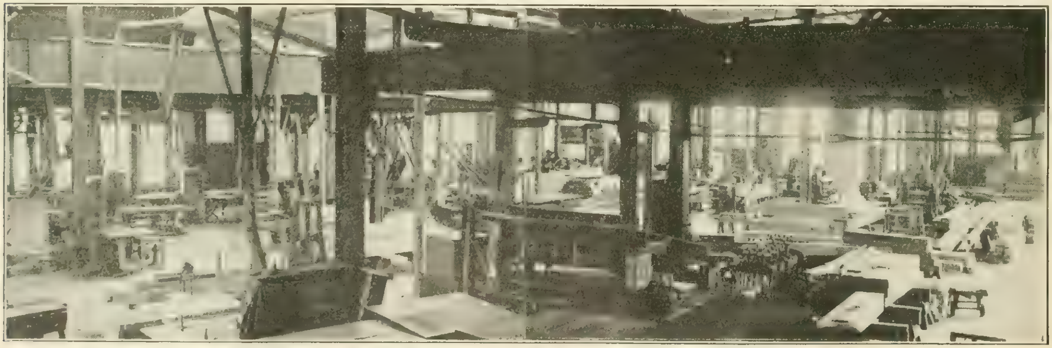


Fig 24.—Interior of Mill, showing Old Arrangement.

POWER HOUSE.

This is the building directly to the west of the planing mill, and is in charge of J. A. Fraser, Chief Engineer, Power House. It is 162½ ft. by 54 ft. 4 ins., divided into two separate rooms, the front one of which, contains the power units, and the other, fig 25, contains the boilers. This latter room has just had an addition of 35 ft. 2 ins. added for a further power reserve.

The building is of the same general design as all the others of the group, being of a brick construction throughout, except that its narrowness makes unnecessary the use of steel columns and the division of the building into bays. The walls are all carried on step footings at a depth of 6 ft., some of which are 4 ft. 11 ins. wide, and the others 5 ft. 11 ins., the latter for the outer wall abutments, and the other for the dividing wall.

Electrical power is used entirely throughout the plant, and is obtained from the Winnipeg Electric Ry. Co., which generates it at a hydro-electric development at Lac du Bonnet on the Winnipeg river. The power is delivered at 2,200 volt, 60 cycle, 3 phase alternating current to the power house of the railway shops, where it has to be transformed for general use in the shops.

Along the east wall of the power house are three 60 cycle, 150 k.w. transformers, that step the power down to 600 volts for transmission throughout the shops for the group and constant speed machine drives. Adjoining this battery of transformers is a 19 k.w. potential regulator. Along the north wall is a motor generator set, with a capacity of 80 k.w., receiving power in the induction motor end direct from the power line at 2,200 volts a.c., and delivering the same at 250 volts, d.c., for transmission through the shops for the variable speed individual drives. This motor generator set is shortly to be duplicated, as the increased demands on the single set are exceeding the capacity. The electrical equipment is all controlled from the 7 panel switchboard to the rear in fig. 25.

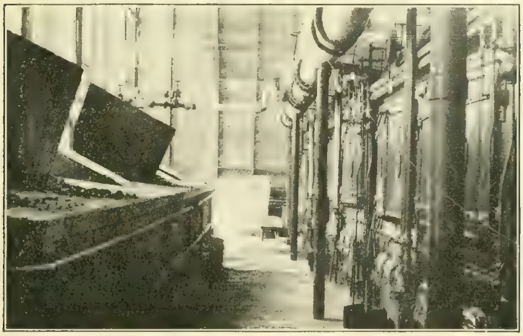


Fig. 25—Interior of Boiler Room.

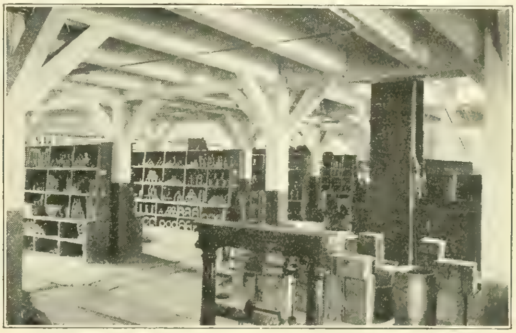


Fig. 26—Interior of Stores Building.

In rear of the motor generator set is located a 20x30x17x26x28 in. air compressor, handling 2,000 ft. of free air per minute, and delivering it at a pressure of about 110 lbs. This compressor being now overtaxed has made necessary the addition of a similar unit, which will shortly be added in an addition to the north end. The only other equipment in the compressor room, other than the oil tanks, are two small fan engines on a platform along the dividing wall of the building, driving the fans in the boiler room.

The long room to the rear of the compressor room, shown in fig. 25, is the boiler room. In it are six 250 h.p. Canada water tube boilers, and a seventh is being installed in the boiler room addition at the far end of the room, which it will be noticed in fig. 25, has only a temporary wall. Each boiler connects through a looped 7 in. pipe from the top of the boiler to a 15 in. header near the top front of the boiler, as in fig. 25, which leads into the compressor room, the connections to the other buildings leading out along the elevated trestlework before mentioned, except the one to the mill and freight car shop, which is to be seen to the rear in fig. 25.

The coal storage for the boilers is in the bins shown ot the left in fig. 25, coal being brought to the building on the track along its east side, as shown in fig. 1, being thrown into the covered bins along the inside of the building, in no way exposing the interior to the cold of the outside. The bins are about 10 ft. deep and are 6 ft. high, holding about 100 tons. In fig. 24, it will be noticed that there are the usual suction pipes for drawing off the shavings from the various machines. These pipes all lead to a suction fan on the power house side of the mill, the pipe from there slanting up at an angle of about 45 degrees to a point over the coal bins, where the shavings drop into a suspended bin, from which they are fired into the first two boilers in the boiler room. These two boilers are equipped for firing both the shavings and coal.

Forced draft is employed, with two 12 ft. fans on a platform at the north end of the boiler room, driven by the two fan engines mentioned before, discharging through a short 6 ft. smoke jack through the roof over top. Back of the boilers, and above the common smoke header, there are two Green fuel economizers with a combined capacity of about 1,000 h.p., so arranged that they can be by passed from the smoke header, causing the smoke draft to pass through at will.

There are two supplies of water—city and Red river. The Red river supply is obtained from a pumping station, shown in fig. 1, at the foot of Garwood avenue on the edge of the Red river. This station is to be increased by the addition of two 100 h.p. suction gas pumps, with a 24 hr. capacity each of 1,000,000 gals. Both supplies are connected together at the power house to the water system, but with drainage joints to prevent contamination of the city water by the impure Red river water.

The boiler feed water passes through a 1,000 h.p. Cochrane feed water heater, and is forced into the boiler by two 6 x 6 x 12 in. feed pumps. There are two auxiliary pumps of similar size for fire purposes, but so connected that in the event of necessity they can be connected for boiler feeding.

The exhaust from the compressor has two paths—one straight out to the atmosphere, and the other through the feed water heater. Under normal conditions, the feed is heated to a temperature of about 180 degs.

The drainage from the heating system of the freight car shop and the mill, returns to the power house, where it is handled by a 6 x 6 x 12 in. pump, and emptied into the feed water heater for delivery to the boiler. Steam traps all deliver to this pump for the same purpose.

STORES DEPARTMENT.

The general stores department for all the company's lines west of Port Arthur, Ont., is located in the Fort Rouge shop grounds, northwest of the machine and erecting shop. The General Storekeeper is A. E. Cox. The building is of brick, 150 by 100 ft., and has two stories and basement. It stands in the centre of a long, narrow platform, 575 by 175 ft., at car level, the main floor of the building being at the same level. At the southerly end of the building are the stores department offices, behind which on the main floor is a system of shelving for the storage of the medium weight stores, the upper story being similarly arranged for light material, and the basement for heavy stock that must be kept under cover, both reached by a freight elevator. The interior arrangement of the building is well planned for convenience. Down the centre and along the sides are main alleys from end to end; at right angles to these main channels are side alleys, on each side of which have been built up tiers of bins, which contain the stores, each in its separate compartment, as shown in fig. 26.

Rough stores are kept on the long platform to the north and south of the building, the platform being divided off into streets, crosswise and lengthwise, by white painted marking lines. The rough stores are thus as easily located and arranged as those in the building. Along both edges and the ends of the platform are service tracks, connecting the building with all parts of the platform, and with a double track line running from the platform diagonally across the grounds to the car department buildings. Along both sides of the platform there are also yard tracks, over which the stores are brought in cars, from the point of manufacture or assembly in the grounds, or from outside points. On the track to the west of the platform is usually spotted the stores supply car, which is to be taken out on the system for the replenishing of local stores at division points.

LOCOMOTIVE HOUSE.

To the north of the machine and erecting shop there is a 40 stall roundhouse, which handles all the motive power in and out of Winnipeg, taxing it to the limit. This is shortly to be relieved by the building of another across the Red river in the new east yards. The Roundhouse Foreman is J. H. McAlpine. The roundhouse is of a brick construction, and is divided into four sections, with 10 stalls in each. The stall at the northwesterly end is partitioned off for the office of the roundhouse foreman, the enginemen's room, oil room and machine shop. The machine shop only con-

[illegible] of the close proximity to the main shop, with which it is connected by a through track which enters the machine shop in the driving wheel and driving box departments. As these are the parts that have greatest need of repair between shoppings, the arrangement is remarkably convenient.

The roundhouse is entered from the north through a 70 ft. turntable equipped with impelling tractor. The pits under each track are concrete, the floor of each sloping to the rear, connecting with the drain. The [illegible] the pit, are em[illegible]. Over each pit is [illegible]

[illegible] driving wheel drop [illegible] trucks there [illegible] All these drop pits are hydraulic, with a full depth drop, non telescopic.

The heating system is provided for by five 75 h.p. boilers in an adjoining building. [illegible] around the outside of the roundhouse near [illegible] diminishing in size to the two extremities. At each pit an 18 in. branch comes down the outer wall and under the floor, discharging into the end of the pit. For [illegible] heating system for the heating of the two [illegible]

[illegible] roundhouse are three rows [illegible] roof being branched down [illegible] f these posts between each [illegible] an elaborate boiler washing [illegible] olumns next the entry doors. [illegible] In addition, there [illegible]

[illegible]

[illegible] Eng., for the [illegible]

[illegible]

Quebec Central Railway Company's Annual Report.

Following are extracts from the report for the year ended June 30, presented at the annual meeting in London, Eng.:—

	1912	1911	Increase
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]			[illegible]
[illegible]		[illegible]	
[illegible]		[illegible]	[illegible]
			[illegible]
[illegible]		[illegible]	
[illegible]		[illegible]	[illegible]
[illegible]			[illegible]

Out of the surplus shown above the directors recommend the payment of a dividend on the share capital at the rate of 4% per [illegible]

[illegible]		[illegible]
[illegible]	[illegible]	
ment	1,754	
	[illegible]	
[illegible]	[illegible]	
		[illegible]
[illegible]		[illegible]

No capital issue has been made during the year.

On June 12 last special meetings of the various classes of security holders were held, at which resolutions agreeing to the amendment of your charter and confirming the agreement between your company and the [illegible] were passed. The C.P.R. shareholders at their general meeting on Oct. 2 also gave their sanction. The lease has accordingly [illegible] securities will be issued in exchange for those now existing

[illegible] receipts per mile of line operated were [illegible] from operation, $1,623. Of the freight traf[illegible] and merchandise, 19.69%. The total train miles run was 957,214; passengers carried, [illegible]

[illegible] with the main features in the report. He [illegible] line to the C.P.R. Co. were explained, and it was stated that the lease will go into effect on Jan. 1 next. In conclusion he [illegible] faithful services which they have rendered [illegible] buted in no small measure to the satisfac[illegible] was 153 miles, with 10 miles of sidings. The net earnings in 1888 were under $50,000, and the £25 shares were at the nominal value of about 5s. The first mortgage bonds, which are now represented by the 3% debenture stock, and 7% income bonds, were worth about £20. This last year the mileage increased to 253, with 52 miles of siding, and the net earnings were over $410,000. The shares are quoted now about £29, and the value of what were first mortgage bonds would make an equivalent of about £105. So, therefore, in handing over this [illegible] C.P.R., we can feel that the value of the securities has been greatly increased, and that the C.P. Co. has acquired a railway in a thoroughly sound condition physically and financially, on which they are never likely to be called upon to pay anything under their guarantee.

The retiring directors, E. Dent, A. Bremner, T. Lindley, F. H. Norman and S. G. Sheppard, were re-elected.

The General Manager, J. H. Walsh, said:—I thank the President for the kind manner in which he has referred to my connection with your company. I feel today [illegible] many trying and difficult conditions to meet and overcome in the early days of the company, it has, on the whole, been a pleasure to your Canadian staff to have been connected with a sound and prosperous little railway. From small beginnings, with a line in poor physical condition and weak financially, we have grown to be a railway for its length equal to any line in Canada, and of a finan[illegible] Originally a streak of iron laid through almost a virgin forest, with little population and no industries throughout its length, running only a [illegible] daily, we now have a line standard in character, with prosperous and enterprising cities and towns along its whole length, and serving a district which has grown through what I think I am justified in saying the enterprise of your company to rank among [illegible] progressive sections of eastern Canada—a line requiring [illegible] and many freight and extra trains daily to give the [illegible] and prominent have we grown to be in our [illegible] to be associated with, and become part of, the great[illegible] and I have no fear, gentlemen, but that the great C.P.R. Co. thoroughly appreciates the fine [illegible] the policy that you have followed of en[illegible] of the line. Before concluding, as this may be the last opportunity I may have of meeting the proprietors of our little line, which I have been connected with for over 30 years, I wish to thank the President and the directors for the uniform kindness and confidence that has been extended to me, both personally and as general manager, as well as to your whole Canadian staff. I can assure you we have all tried to live up to and be worthy of that confidence, and you transfer today to the C.P.R. a railway system and staff of employes of which you may well be proud.

[illegible] directors [illegible] Although it may be for the last time that [illegible] there will probably have to be yearly meetings, though [illegible] with regard to the earnings, as your interest is guaranteed. Still, I think we shall all follow the fortunes of the Q.C.R. Co. with great interest for many years to come, and I trust that Mr. Walsh will live for many years to preside over the com[illegible]

Railway Mechanical Methods and Devices.

Cutting Bolt Stock at Canadian Pacific Railway Winnipeg Shops.

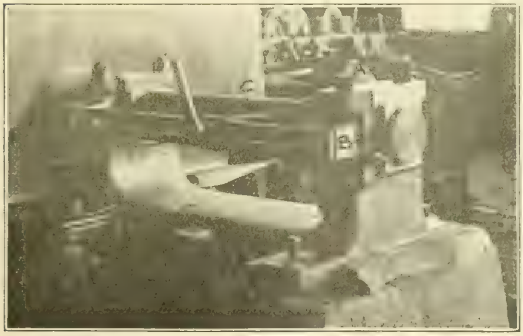
The customary method of cutting up bolt stock is under the shears, mating cutouts being formed in the upper and lower blades in which the different sizes of bolt stock is placed. This is a slow process, as the stroke of the shears being at a slow rate, it is impossible to produce them rapidly. The practice of cutting off several of a batch grouped together under flat blades has been tried at different shops with varying degrees of success, but this manner of handling work has certain decided disadvantages.

In the bolt department of the C.P.R. Winnipeg shops there are two special machines for the rapid cutting up of bolt stock, one of which is shown in the accompanying illustration. The machine is essentially the same in construction as the headstock of a lathe, there being a central spindle of generous size supported at either end of the machine frame in bearings as in the spindle of a lathe. The drive is from the left end of the spindle, behind the screen.

On the near end of the spindle there is a projecting arm, A, integral with the spindle, with which it revolves. To the front face of this arm is attached a shear section, consisting of a piece of hardened steel, and on the inner face of the front bearing standard there is a corresponding shearing piece, the revolving piece just clearing the stationary one as it revolves, the same as the two shear blades of a vertical shear would do.

Through the near bearing standard there is a hole, B, passing through the stationary shear blade. Through this hole the bar stock is passed, being sheared off on the inner face by the revolving shear, which revolves at a comparatively high rate of speed. The length of the bolts are set by the stop C. on the front face of the machine. This stop can be moved the length of the spindle along the slotted bar attached at each end to the bearing standards.

The rapidity of production is nearly as great as the speed with which the operator can feed the bar into place between shears. To maintain uniform operation, there is a heavy flywheel on the spindle behind the rear screen.



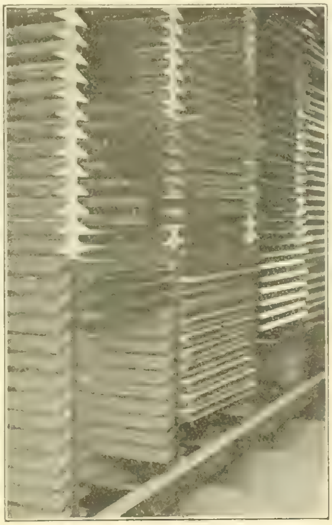
Special Machine for Cutting Bolt Stock.

F. F. Osborne, General Manager of the Bengal (India) Ry., is visiting British Columbia, to secure ties for the railway. An experimental shipment has been arranged.

Varnish Drying Racks at the Grand Trunk Railway Port Huron Shops.

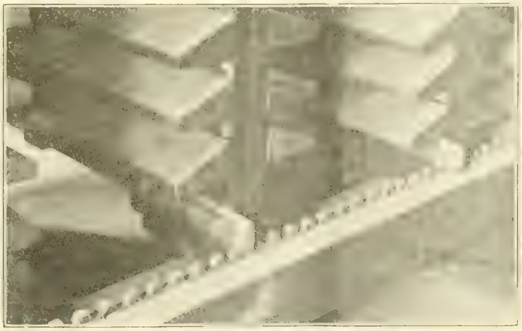
In the varnish department of the G.T.R. car shops at Port Huron, Mich., new drying racks for sashes have been constructed. The general appearance and details of construction are clearly shown in the two accompanying illustrations.

These racks are 25 ft. long, and extend from ceiling to floor. The partitions for carrying the sashes are movable, and it is in this particular that they are especially unique. Two beams, placed the depth of the drying racks apart, are raised about a foot above the level of the floor, and on the upper surface of these scantlings there is a notched strip of wood, as the detail photograph shows, these notches consisting of semi circular grooves about an inch apart, centre to centre. At the top of the rack structure there is a similar pair of notched scantling with cut-outs on the upper surface. The division walls to carry the drying sashes have a ⅜ x 1½ in. strip of wrought iron attached to both the top and [illegible] and projecting about 2 in. at either end. These are so placed [illegible] into the grooves on the surface of the supporting scantlings. The upper cross bar hangs in one of the grooves, while the lower one rests in the corresponding groove on the lower framework. Thus, the intermediate partition walls can be moved at will to accommodate any size of sash, the end ones, which form a part of the framework, being the only ones that are solid. Working from one end, the different standard widths can be set for handling normal conditions, and when there is a special rush of any particular size, the racks can be altered easily to accommodate this variation.



Adjustable Racks for Varnished Sash.

The ledges on which the sash rest are different from those found generally, though the same style is to be found in some car shops. The upper, or resting surface, on which the sashes rest, slopes down at about a 20 deg. angle, so that all of the sash that touches the shelves is the edge on which it is resting, the advantage being that the varnish is in no way marred, as it would be in places where the resting edges are horizontal and not sloping. An inspection of the filled racks shows what a very small portion touches. The sash surface comes out clear and unmarked by the resting surface. The marring of the edges is not a very serious matter when it is considered that the best part of it is hidden in the sash groove, yet a perfect job has such an added pleasure to the true mechanic as to make a kink of this type appreciated.



Details of Adjustable Rack for Varnished Sash.

Hot Water Mixer at Canadian Pacific Railway Montreal Shops.

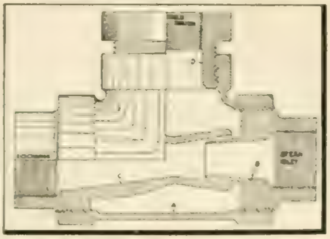
The accompanying plan shows a home made hot water mixer for locomotive boiler washout that can be made by any machinist in a short time, and with very little material. The main body A is a [illegible] 3½ in. T, and the piece B is made from a brass 1¾ in. pipe. This is the steam inlet. The piece C is the discharge end adapted for 2½ in. pipe, and the piece D is the cold water inlet adapted to suit a 2½ in. cold water union.

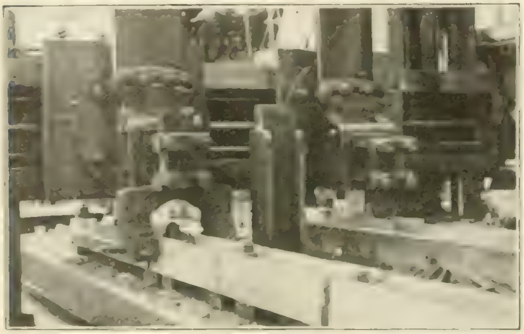
We have an extra water header combined with boiler for washout, and this hot water mixer we have connected in our piping, which serves as an emergency outfit when the header does not work, and the results are always of the best.—J. G. Koppell, Railway and Locomotive Engineering.

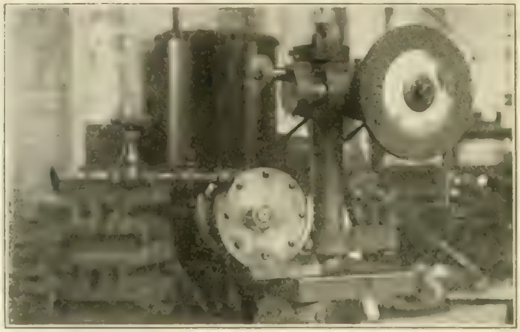
Planing Locomotive Shoes and Wedges at Canadian Northern Railway Shops.

The accompanying engraving shows the practice at the C.N.R. Winnipeg shops in the matter of machining locomotive shoes and wedges. [illegible] [illegible] [illegible] at different stages of the work.

The castings are mounted in a row on the planer table, with a small block under each end. The casting ends are placed close together [illegible] holding down the two adjacent ends. A special forked tool is used for planing two sides, held in the head in the usual manner. Each arm of the fork has an inwardly projecting tool, [illegible] by a set screw in the


Hot Water Mixer


Planing Locomotive Shoes in Batches


Portable Grinder for the Horizontal Milling Machine

front face. The tool has a [illegible] in each fork, which frees the tool from the cut on the return stroke. [illegible]

When the sides of the shoes are planed, they are moved over [illegible] to operate on. On the table of the planer is fastened a long trough shaped jig, in which the shoes are secured by set screws from the far side. A tool of the correct width is held in the tool post, [illegible] between the two heads.

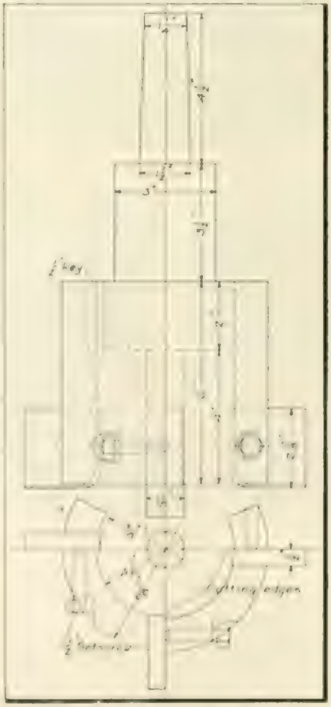
We are indebted to A. [illegible], Shop Engineer, for this information, and from [illegible] per day.

Tool for Turning Rocker Arm Bosses at the Grand Trunk Railway Stratford Shops.

The accompanying illustration of a tool [illegible] locomotive rocker arms [illegible] G.T.R. locomotive shops at Stratford, Ont. [illegible] shape. Different tools will be found in use, [illegible]

[illegible] cutters. The outside and inside diameters [illegible]

or shell cutter depending on the work with the drill press feed, reduces the bosses to



Tool for Turning Rocker Arm Bosses

size, and at the same time puts the fillets in [illegible] the cutters being ground to give this required corner.

Portable Milling Tool Grinder at Grand Trunk Stratford Shops.

The accompanying illustration shows a portable milling tool grinder for use on large horizontal millers. The principal use to which it is put is to regrind teeth that become broken in the middle of a job, removing the rough edges, or for the grinding of a new cutting edge inserted in the place of the broken one. The advantage lies in the fact that the cutter does not require to be removed from the lathe, a desirable factor, for the removal of the cutter spoils the cut to a certain degree, it being impossible to place the cutter back in exactly the same place. There is also the loss of time in the following of such a course, as the disassembling of the machine is no small task.

The base of the grinder is secured to some convenient surface such as the platen or the top of a side rod being milled, or any level surface. Under the tooth to be ground, the double swinging arm near the bottom of the stand is placed, so as to have the cutting face level. The emery wheel, carried on a shaft on a clamp block attached to the vertical rod of the stand, is located vertically to the correct level, and the adjustment radially to the cutter is made through the small adjusting screw near the top, which carries the grinding wheel arbor along that spindle.

The drive of the grinder is from a small impulse air motor, mounted on the grinder base, power being transmitted through a short section of circular belt. The saving in time on the horizontal miller from the speedy repair of cutters broken or requiring repair, is quite considerable, and the quality of the work performed is the equal of that which would be possible on a stationary grinder.

The Manchester Ship Canal Co., Manchester, Eng., has placed a contract for the construction of a 1,500,000 bush. reinforced concrete elevator on the American system. It was designed by John S. Metcalf Co., Ltd., Montreal and Chicago, who are acting as consulting engineers for the company on the work. It will be of reinforced concrete throughout, will have large capacity for receiving grain in bulk, storing, milling, and for shipping in sacks and in bulk. Approximate total cost, $500,000.

J. B. WAY, agent, C.P.R., Sault Ste. Marie, Ont., in remitting his renewal subscription, writes:—"I cannot understand how I got along without Canadian Railway and Marine World before I subscribed to it. I believe every railway man in Canada should have a copy on his desk."

Canadian Northern Railway Company's Annual Report.

The following directors' report, over the signature of Sir Wm. Mackenzie, President, was submitted at the annual meeting recently:

The result of operations for the year ended June 30, 1912, are as follows:

GROSS EARNINGS

Passenger traffic	$ 3,434,140.81
Freight traffic	15,567,998.17
Express, mail, telegraph, dining and sleeping cars, interest and profits from elevators and other subsidiary companies and investments	1,857,954.65
	$20,860,093.63
Working expenses, including taxes, etc.	14,979,048.52
Net earnings	$ 5,881,045.11
Fixed charges	4,630,844.12
Surplus	$ 1,250,200.99
Interest at 5% per annum paid on income charge convertible debenture stock outstanding	674,804.11
Net surplus for year	$ 575,396.88

The gross earnings show an increase of $4,499,381.24, or 27.50%, and the net earnings of $890,698.29, or 17.85% over the preceding year. The working expenses were 73.82% of gross earnings of the railway proper and 71.81%, including taxes, of the gross earnings from all sources, compared with 72.59 and 69.50% respectively last year.

During the year over 586 miles of newly constructed tracks were added to the system, the average mileage operated being 3,888 miles.

The classified table of freight carried again reflects a substantial development of the industrial and agricultural resources of the country served by your railway. The statistics covering grain, including the figures representing flour shipments, show a total movement of over 60,000,000 bushels, or approximately 32% of the total inspected crop of Western Canada. This shows a notable advance over any previous year, and is a reliable indication of the productiveness of the territories your directors have selected. An increase of 120% in the total bulk of commercial coal carried is also remarkable, the figures being 804,803 tons moved this year, compared with 370,161 for the previous year. This increase is indicative of the growth of the coal mining industry in Western Canada, which, upon the completion of the extensions of your railway now being constructed in the larger coal areas, will receive an even greater stimulus. There is also a further indication of the prosperous extension of the cities, towns and settlements along the lines of your railway, as shown by the increase of 48% over last year in the amount of building materials carried by your railway during the year.

Land sales during the year were 55,111 acres for $836,084.37, an average of $15.17 an acre, compared with 279,151 acres for $3,345,498.73, an average of $12 an acre, the preceding year. The reduction in sales is substantial, but your directors, recognizing that the value of productive acreages in Western Canada is assured, and being desirous of, as far as possible, selling to settlers only, have not pressed the sale of your lands. On the other hand they have adopted an aggressive policy of colonizing the free lands offered by the Dominion Government in territories adjacent to your railway; 2,479,000 acres of these lands were entered upon by settlers during the year, of whom a largely increased number were a most desirable class of British emigrants.

The operation of the Royal Line Steamships continues to vindicate the wisdom of engaging in the Atlantic trade. The increasing popularity of the route emphasizes the necessity for extending the service so that the company may take the full benefit of the business controlled by its organization. The negotiations referred to in the previous report, having in view the increase of the fleet, did not terminate satisfactorily and your directors are considering other means of attaining the object.

Your directors are pleased to report that a movement having as its purpose the adoption of more permanent methods of agricultural development in the prairie provinces is responding favorably to the impetus given to it by the demonstration and educational propaganda which is being actively carried on by the various railway companies in conjunction with the Dominion and provincial governments. This movement was inspired, primarily, to offset the reduction in production of beef and other cattle products which followed the settlement of the large ranch leases by homesteaders and small grain farmers. Climatic, physical and financial conditions encourage the pioneer farmer settler to engage in the production of grain to the exclusion of other agricultural products. There are, however, indications from the campaign for diversified farming which has been engaged in, of a change to more permanent methods. The progress of this movement is especially gratifying to your directors as the location of the lines of your railway in the prairie provinces is through country which is preeminently adapted to the practice of diversified farming in general.

Great progress has been made in the construction of the transcontinental line of the Canadian Northern system, which it is hoped will be completed by the end of 1913; the line through British Columbia to connect the western lines of your railway with tidewater at the Pacific coast is advancing rapidly. In addition to a very fortunate advantage of easy gradients, the location of the line enters without competition into a large territory, the physical characteristics of which will attract a very desirable class of settlers. The line will also give access to a hitherto unknown section of the Canadian Alps, of which the scenic attractions are such as will divert a large volume of the transcontinental tourist traffic to the route.

The work of linking up the lines of your railway in Western Canada with the railways of the Canadian Northern system in the eastern provinces is also making satisfactory progress, having regard to weather and other conditions. The resources of the country opened up by this line will be productive of great traffic advantages to your company. Capital is only awaiting the completion of these transportation facilities before entering upon the development of iron and other mineral deposits, extensive pulpwood and timber areas. In addition to the tonnage assured to your railway from this industrial development there are the traffic advantages which will accrue from the agricultural development of the great clay belt of Northern Ontario, through which your railway will pass for 350 miles. Experienced officers of your company who have carried out explorations of the entire area estimate that the industrial and agricultural resources of this territory will attract and support a population of over 2,000,000 of people.

During the year another section of the Canadian Northern Ontario Ry. was opened for traffic, but your directors regret that due to adverse weather and other conditions the completion of the line between Ottawa and Toronto has been delayed. The work is, however, progressing and it is hoped in a short time to establish a through service connecting Toronto with Ottawa, Montreal and Quebec. The pulp and paper industries in Northern Quebec are expanding quite satisfactorily, the traffic advantages of which accrue chiefly to railways operated under your control in the Province of Quebec.

The movement of the crop of 1912 has now begun, and recognized authorities estimate the yield of the Provinces of Manitoba, Saskatchewan and Alberta as follows: Wheat, 196,000,000 bush.; oats, 224,500,000 bush.; barley, 49,600,000 bush.; flax, 12,900,000 bush.; total crop, 483,000,000 bush. Having regard to the fact that the yield is greater than any previous year; that the quality is good and that the market value is satisfactory, your directors anticipate another year of substantial growth in revenue.

Since the close of the fiscal year the gross and net earnings for the months of July and August have been ascertained and the figures show a very satisfactory increase over the same period last year. They are as follows:

	1912.	1911.	Increase.
Gross earnings	$3,575,500	$2,896,500	$679,000
Operating expenses	2,710,100	2,220,200	489,900
Net earnings	$865,400	$676,300	$189,100

Your directors have noticed with great pleasure the keener interest in Canadian affairs generally displayed by statesmen and other leaders of opinion and thought in Great Britain and emphasized by the large number of prominent men who have visited Canada during the past summer. They hope to see a still larger number of visitors from the old country in the future, as they believe that a personal and unbiased examination of the actual and potential resources of the Dominion will result in still greater confidence in the future of Canada and the close co-operation in her development, which your directors have in the past endeavored to promote by every means in their power, in the interests of the Empire.

The accounts and statistical tables appended were submitted over the signature of D. B. Hanna, Third Vice President.

GENERAL BALANCE SHEET.

ASSETS.

Cost of railway and equipment		$191,993,350.92
Acquired securities (Cost)		8,294,016.87
Advances to other companies		2,817,091.80
Advances to lines under construction		6,935,410.80
Material and supplies on hand	$2,235,049.90	
Due from agents, station balances, etc.	1,213,479.39	
		3,448,529.29
Deferred payments on land sales	9,082,673.91	
Cash with National Trust Co., account of land sales	2,869,618.71	
		11,952,292.62
Cash account		
With Dominion Government	1,175,464.54	
With Province of Manitoba	18,278.35	
With Province of Saskatchewan	1,978,110.40	
With Province of Alberta	1,339,752.62	
Cash on hand	1,931,641.79	
		6,443,247.70
		$231,883,940.00

In addition to the above assets the Company owns 816,755 acres of land in Manitoba and Saskatchewan.

LIABILITIES.

Capital stock		$ 70,000,000.00
Bonds and stock guaranteed by Government		54,390,491.20
4% perpetual consolidated debenture stock		39,464,716.63
5% Income charge convertible debenture stock		15,000,000.00
Land grant bonds		6,040,306.70
1899	$2,000,000.00	
1909	4,040,306.70	
Car trust obligations		15,177,882.73
Current liabilities—		
Unpaid pay rolls	1,074,168.18	
Unpaid audited vouchers	2,058,659.91	
Due to other companies	3,321,114.92	
		6,453,943.01

Coupons and di[illegible] warrants [illegible]	[illegible]	
Accrued interest on bonds and [illegible]	459,090.25	
		2,149,659.49
Equipment [illegible]		345,560.63
Land [illegible]	16,874,826.32	
[illegible]	5,986,553.29	
		22,861,379.61
		$231,883,940.00

Income Account

Operating expenses		$ 14,794,403.50
Taxes [illegible]		106,889.05
Taxes [illegible] lands		77,685.97
Interest on Bonds, etc.—		
Consolidated debenture bonds, guaranteed by Manitoba government	$ 487,010.54	
Ontario division debenture bonds, guaranteed by Manitoba government	230,690.46	
Winnipeg terminal bonds, guaranteed by Manitoba government	120,000.00	
3% debenture stock, guaranteed by Dominion	280,799.86	
3½% debenture stock, guaranteed by Dominion	258,405.24	
4% debenture stock, guaranteed by Manitoba government	113,828.49	
4% debenture stock, guaranteed by Saskatchewan government	236,319.28	
4% debenture stock, guaranteed by Alberta government	89,960.00	
Consolidated debenture stock	1,496,988.82	
Qu'Appelle, Long Lake and Saskatchewan Ry 4% debenture stock	202,055.99	
Qu'Appelle, Long Lake and Saskatchewan Ry. 6% bonds	963.60	
Land grant 4% bonds	163,792.52	
		3,680,823.80
Rental of Leased Lines—		
Northern Pacific and Manitoba Ry	225,000.00	
Minnesota and Manitoba Rd	13,960.00	
		238,960.00
Interest on equipment securities		711,060.32
Accrued interest to June 30, 1912	459,090.25	
Less accrued interest to June 30, 1911, paid during current year	304,341.34	
		154,748.91
Interest at 5 p.c. per annum paid on income charge convertible debenture stock outstanding		674,804.11
Balance of income account		5,986,553.29
		$26,425,988.95
Balance of income account at June 30, 1911		$ 5,565,9 5.32
Gr[illegible]		
Passenger earnings	$ 3,434,140.81	
Freight earnings	15,567,998.17	
Express, mail and miscellaneous earnings	1,857,954.65	
		20,860,093.63
		$26,425,988.95

Gross Earnings

Class.	1911-1912	p.c.
Passenger	$ 3,434,140.81	16.46
Freight	15,567,998.17	74.63
Mail	112,177.63	00.54
Express	466,157.11	02.24
Miscellaneous	1,279,619.91	06.13
Total	$20,860,093.63	100.00

Operating Expenses

Class.	1911-1912.	p.c.
Maintenance of way and structures	$ [illegible]	17.42
Maintenance of equipment	3,262,727.41	21.78
Traffic expenses	360,474.34	02.41
Transportation expenses	[illegible]	53.49
General expenses	733,727.54	04.90
Total	$14,979,048.52	100.00

Summary of Earnings and Expenses

Class.	1911-1912.	p.c.
Gross earnings	$20,860,093.63	
Operating expenses	14,979,048.52	71.81
Net earnings	5,881,045.11	28.19

P[illegible] Carried

	For year ended June 30 1912.	1911.
[illegible]	[illegible]	2,215,094
Grain, bushels	53,441,140	40,249,939
Live stock, head	[illegible]	137,295
Logs and lumber, feet	[illegible]	324,221,000
[illegible]	[illegible]	210,625
Coal, tons	[illegible]	[illegible]
Immigrants' effects, cars	[illegible]	[illegible]
Building material, lime, stone, brick, [illegible] cars	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]

Passenger Traffic.

	1911-1912.	1910-1911.
Passengers carried (earning revenue)	1,681,760	1,394,361
Passengers carried one mile	158,400,017	113,506,430
Passengers carried one mile per mile of road	40,741	[illegible]
Average distance carried	94.18	81.40
Total passenger revenue $	3,349,317.00	2,756,415.06
Average amount received per passenger $	1.99.16	1.97.68
Average amount received per passenger per mile ... cts.	.02.115	.02.428
Total passenger train earnings $	4,012,475.55	3,226,130.60
Passenger train earnings per train mile $	1.21.074	1.17.116

Freight Traffic.

Revenue tons carried	5,970,449	4,675,405
Revenue tons carried one mile	2,024,003,946	1,385,711,579
Revenue tons carried one mile per mile of road	520,577	409,610
Average distance haul of one ton	339.00	296.38
Total freight revenue $	15,337,533.95	11,768,493.37
Average amount received for each ton of freight $	2.56.891	2.51.711
Average revenue per ton per mile cts.	.00 758	.00.84
Total freight train earnings $	15,567,998.17	11,951,993.57
Freight train earnings per train mile $	2.37.492	2.66.112

Passenger and Freight, Etc.

Gross earnings per mile of road $	5,365.25	4,836.15
Operating expenses per mile of road $	3,852.64	3,361.03
Net earnings per mile of road $	1,512.61	1,475.12
Amount required per mile of road to pay fixed charges, including leased lines $	1,008.17	993.57

Train Mileage.

Passenger trains	3,314,063	2,754,634
Freight trains	6,555,157	4,491,345

Expenses Per Traffic Train Mile.

Maintenance of way and structures cts.	26.44	32.60
Maintenance of equipment cts.	33.06	30.59
Traffic expenses cts.	03.65	03.64
Transportation expenses, cts.	81.19	81.14
General expenses cts.	07.43	08.95
Total $	1.51.77	1.56.92

Summary of Equipment at June 30

	1912.	1911.
Locomotives	430	398
Sleeping and dining cars	64	50
Passenger coaches	307	226
Baggage and mail and express cars	[illegible]	90
Business cars	14	11
Freight, refrigerator and stock cars	18,675	14 778
Conductors' vans	257	231
Boarding, tool, auxiliary cars, steam shovels and snow equipment	594	481

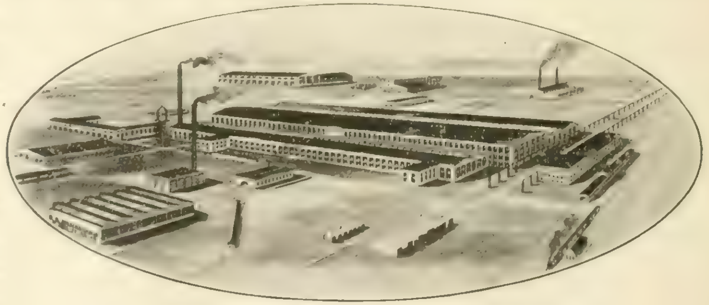
The total mileage owned and operated, including leased lines, at June 30, was 4,316.62 miles, located as follows: Ontario, 366.60; Manitoba, 1,758.25; Saskatchewan, 1,718.75; Alberta, 394.82; Keewatin, 44.50; Minnesota, 43.70.

The average mileage operated for the fiscal year was 3,888. The results per mile operated were as follows: Earnings, $5,365.25; expenses, $3,852.64; net earnings, $1,512.61.

The report was unanimously adopted at the annual meeting. The directors who were elected for the current year are: President, Sir Wm. Mackenzie; Vice President, Sir Donald Mann; other directors, Z. A. Lash, F. Nicholls, R. M. Horne-Payne.

Canadian Pacific Railway Ogden Shops at Calgary.

A complete preliminary description of these shops, with ground plan, was published in Canadian Railway and Marine World for February last. The accompanying illustration gives a birds eye view of the shops as they will appear when completed. It is not strictly accurate in all details, but is nearly correct, and gives a good general idea. The construction work has now reached a stage where the real magnitude of the completed plant may well be imagined. Under the direction of Engineer F. E. Caldwell, Westinghouse, Church, Kerr and Co., have 1,200 men at work on the 400 acre block which is the site of the new shops, between the irrigation canal and the Bow river. From the business portion of Calgary only the high concrete smokestack of the power house is visible over the banks of the river, but inside the grounds there is a busy scene where day work and a certain amount of night work is being carried on. All the structural steel is up and already considerable closing in has been accomplished. It is the intention to have this practically completed on all the buildings erected in 1912 so that the placing of machinery and preparatory work for repairing can be expedited. A great deal of machinery has already arrived. Immense quantities of material are arriving still, and there is every appearance that the contract to have the buildings completed early in 1913 will be carried out.



C.P.R. Ogden Shops, Calgary, Alta.

For the comfort of the employes the company has reserved a block adjoining the shops whereon are being erected the first lot of houses. These will be supplied with all modern city conveniences of water, light and sewage, etc. As soon as the electric railway bridge is finished across the river, the Calgary Municipal Ry. will operate a service so that employes may easily reach every part of the city. There are now many buildings on private property near the shops, a brick hotel facing the main entrance, picture theatre, etc., and, in fact, though only a few months since the ground was first broken, there is a town where but a very short time ago, except for passing trains, the section man, irrigation ditch rider or cowboy were the sole visitors.

Between the shops and the business portion of the city, a three track bridge is being built across the Bow river, and the C.P.R. will have a double track extending all the way.

Orders by the Board of Railway Commissioners.

Beginning with June, 1904, Canadian Railway and Marine World has published in each issue summaries of orders passed by the Board of Railway Commissioners, so that subscribers who have filed our paper have a continuous record of the Board's proceedings. No other paper has done this.

The dates given of orders, immediately following the numbers, are those on which the orders took place, and not those on which the orders were issued. In many cases orders are not issued for a considerable time after the dates assigned to them.

17871. Oct. 30.—Approving revised location C.P.R. Sudbury to Sault Ste. Marie branch as now constructed, from mileage 31.76 to 34.76, westerly from Webbwood, Ont.

17872, 17873. Oct. 30.—Authorizing Campbellford, Lake Ontario and Western Ry. to construct across three highways, mileage 93.59 to mileage 95.8, Northumberland County, Ont., and across Sidney street and West street, Trenton, Ont.

17874. Oct. 30.—Refusing application of J. A. C. Ethier, M.P., for order compelling C.P.R. to erect platform for milk shipping purposes between St. Herman and Ste. Scholastique, at Cote St. Louis, Que.

17875. Oct. 29.—Authorizing C.P.R. to open for traffic Moose Jaw northwest branch from Outlook to Conquest, 9.3 miles, including bridge across South Saskatchewan river.

17876. Oct. 30.—Authorizing C.P.R. to build spur to its ballast pit near Olds, Alta., across Edmonton trail and road allowances.

17877. Oct. 29.—Approving proposed location C.P.R. station at Shelburne, Ont.

17878. Oct. 30.—Authorizing C.P.R. to build double track across G.T.R. at Delson Jct., and rescinding order 17437, Sept. 11, 1912.

17879. Oct. 30.—Allowing correction of plan showing location of stations at Gwydyr and Lampman, and addition to station grounds at Regent, C.P.R., Boissevain to Lauder branch, Man.

17880. Oct. 29.—Authorizing C.P.R. to build spur for Ontario Wind Engine and Pump Co., Calgary, Alta.

17881. Oct. 29.—Authorizing C.P.R. to build bridge 8.7 on Interprovincial and James Bay Ry., in Province of Quebec.

17882. Oct. 29.—Authorizing C.P.R. to open for traffic double track of Moose Jaw subdivision, from Belle Plain, mileage 117.0, to Pasqua, Sask., mileage 127.6.

17883. Oct. 30.—Further extending, until Nov. 30, 1913, time within which C.P.R. may complete branch line across highways near Marquette, Man.

17884. Oct. 29.—Authorizing Esquimalt and Nanaimo Ry. to build bridge over Little Qualicum river, on its Comox extension, B.C.

17885. Oct. 29.—Authorizing C.N.O.R. to build across three highways on its Hawkesbury-Montreal line, Laurent parish, Que.

17886. Oct. 30.—Rescinding order 17782, Oct. 17, 1912.

17887. Oct. 31.—Authorizing C.N.O.R. to build across and divert public road between lots 10 and 11, con. 8, Chisholm tp., Ont.

17888. Oct. 30.—Authorizing C.N.O.R. to build overhead across Montreal Tramways Co.'s tracks, near Cartierville, Que.

17889. Oct. 29.—Authorizing C.N.R. to build its Swift Current extension across two highways, Saskatchewan.

17890, 17891. Oct. 29.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to construct bridge over creek at mileage 72.75, and to build across nine highways, in Tyendinega tp., mileage 59.45 to mileage 65.75.

17892. Oct. 30.—Approving location G.T.P. Branch Lines Co., Moose Jaw-Northwest branch, mileage 48.55 to mileage 67.86, Saskatchewan.

17893. Oct. 30.—Authorizing G.T.R. to build bridge at mileage 109.35, 20th district, Middle division, over creek and public road.

17894. Oct. 29.—Authorizing city of Saskatoon, Sask., to carry its municipal street railway across C.P.R. at Avenue A and at Twenty-third street.

17895. Oct. 31.—Dismissing Canada Cement Co.'s complaint against charge of demurrage on cars ordered to a specific siding, and delayed on account of space not being available.

17896. Oct. 31.—Authorizing G.T.P. Branch Lines Co. to divert road at mileage 88.2, Calgary-Boundary branch, Alberta.

17897-17899. Oct. 31.—Authorizing C.P.R. to build spurs for D. Lalonde at Mile End station, Que.; for its Department of Natural Resources at Strathmore, Alta., and for S. Walker, at Winnipeg.

17900. Oct. 31.—Dismissing application of W. H. Dawson and residents in vicinity of Stonefield, Que., for order directing C.P.R. to stop trains at road between Staynerville and Grenville stations, to pick up shipments of cream.

17901. Oct. 30.—Approving C.P.R. plan showing extension of bridge 0.41, Fort William terminals, Ont.

17902. Oct. 31.—Approving proposed layout of C.N.O.R. station grounds at Clarendon, Que.

17903. Oct. 29.—Authorizing city of Saskatoon, Sask., to carry its municipal street railway across C.P.R. at Twentieth street.

17904. Oct. 29.—Authorizing C.P.R. to change location of station at L'Acadie, Que.

17905. Oct. 31.—Approving location G. T. P. Ry. proposed station at South Hazelton, B.C.

17906. Nov. 2.—Approving location C. N. O. R. through North Bay, Ont., mileage 343.55 to mileage 346.42 from Montreal.

17907. Oct. 26.—Authorizing G.T.P. Ry. to build spur for T. Jackson & Son, Winnipeg.

17908. Oct. 2.—Authorizing C. N. R. to build cut-off through Winnipeg to connect its Fort Rouge yards with its eastern yards.

17909. Nov. 4.—Certifying that correction of error, in location plan of Toronto Eastern Ry. at Bowmanville, Ont., is allowed, upon condition that company cross mill pond by trestle work and do no filling in the pond.

17910. Nov. 4.—Authorizing Campbellford, Lake Ontario and Western Ry. (C. P. R.) to build bridge 11.15, in Ontario.

17911. Nov. 6.—Postponing, to and including Dec. 31, certain railway tariffs covering increased charges for cartage.

17912. Nov. 5.—Authorizing N. St. C. & T. Ry. to build spurs for Thorold Pulp Co., Thorold, Ont., and Interlake Tissue Mills Co., Merritton, Ont.

17913. Nov. 4.—Authorizing St. John and Quebec Ry. to cross over C.P.R. tracks between 49th and 50th miles, north of McAdam Jct., N.B.

17914. Nov. 5.—Authorizing Campbellford, Lake Ontario and Western Ry. (C. P. R.) to build across Toronto and Eastern Ry. overhead at mileage 162.98, Whitby, Ont.

17915. Nov. 4.—Authorizing C.P.R. to build across road in lot 59, Kildonan parish, Man., main line, Winnipeg to East Selkirk.

17916. Oct. 31.—Approving location C. P. R. Swift Current southeasterly branch to junction with Moose Jaw southwesterly branch, mileage 45 to mileage 101.3, and to cross 57 highways.

17917. Nov. 5.—Directing C.P.R. to remove embargo on sand loaded in cars other than its own, shipped into Winnipeg from points on C.N.R. line.

17918. Nov. 2.—Authorizing C. N. R. to build spur for D. R. Fraser & Co., Edmonton, Alta.

17919-17921. Nov. 5.—Authorizing C. N. O. R. to build across Park avenue, Mance street and McPherson avenue, Montreal.

17922. Nov. 4.—Directing C. N: Q. R. to provide flag station for passenger purposes only at Larose station, Que.

17923. Nov. 5.—Authorizing G. T. P. Branch Lines Co. to divert Lake View avenue, Moose Jaw, Sask., and to construct Regina-Moose Jaw branch under it.

17924-17926. Nov. 4.—Authorizing G.T.R. to build sidings for Breithaupt Leather Co., Penetanguishene, Ont.; for Sarnia Chain Co., Sarnia, Ont., and for Beaverton Brick & Tile Co, Beaverton, Ont.

17927. Nov. 4.—Authorizing G.T.R. to build northerly track across Cote Noir road, St. Antoine de Longueuil parish, Que.

17928. Nov. 2.—Directing G.T.R. to install two sets of gates at crossings of Lapiniere road, between Greenfield Park and St. Lambert, Que.

17929. Nov. 2.—Directing G.T.R. to repair and extend to highway, the centre platform at Bulstrode station, Que., and to put culvert in repair.

17930. Nov. 4.—Approving revised location Central Ry. Co. of Canada from mileage 0 to 5, in Montreal, on condition that grade at crossing of St. Michel road be eliminated.

17931. Nov. 4.—Authorizing C.N.O.R. to cross jointly with the Lachine, Jacques-Cartier and Maisonneuve Ry., under the C.P.R., near Jacques-Cartier Jct., Que.

17932. Nov. 5.—Authorizing C.P.R. to open for traffic its Wilkie southeasterly branch from Wilkie, to Anglia, 35.3 miles.

17933. Nov. 5.—Approving proposed location G.T.P. Branch Lines Co. station at Beiseker, Sask.

17934. Nov. 4.—Authorizing C.P.R. to build across 58 highways from mileage 22.7 to 106.2 on its Pheasant Hills branch.

17935. Nov. 5.—Directing C.P.R. to install improved type of automatic electric bell at crossing at Sharbot Lake, Ont.

17936. Nov. 6.—Authorizing G.T.R. to build siding for Standard Steel Construction Co., Welland, Ont.

17937, 17938. Oct. 24.—Authorizing town of Pointe aux Trembles, Que., to extend St. Jean Baptiste street and First avenue across C. N. Q. Ry.

17939. Nov. 7.—Directing that cost of installing gates at crossing of Main street, Victoriaville, Que., be divided as follows: 20 per cent. out of railway grade-crossing fund; 30 per cent. by Victoriaville municipality, and 50 per cent. by G.T.R.; and that cost of maintenance be paid 70 per cent. by railway company and 30 per cent. by municipality.

17940. Nov. 7.—Authorizing C.N.Q.R. to build across two highways on its St. Eustache-St. Jerome line, Que.

17941. Nov. 6.—Authorizing C.P.R. to open for traffic its second track from Secretan to Chaplin, mileage 44.9 to 54.

17942. Nov. 9.—Authorizing G.T.R. to take certain lands in St. Antoine ward, Montreal.

17943. Nov. 9.—Approving by-law of Marconi-Wireless Telegraph Co. of Canada, authorizing J. H. Lauer, general manager, to issue tariffs of tolls.

17944. Nov. 7.—Directing G.T.R. to install improved automatic electric bell at crossing just west of Vineland station, Ont.

17945. Nov. 7.—Authorizing C.P.R. to build spur for N. K. Fairbank Co. in Lachine parish, Que.

17946. Nov. 7.—Authorizing C.P.R. to rebuild bridge 13.9, Owen Sound subdivision, Ont.

17947. Oct. 19.—Authorizing N. St. C. & T. Ry. to build its Beamsville extension across five highways in Louth tp., Ont.

17948. Nov. 5.—Authorizing N. St. C. & T. Ry. to build across 12 highways in Grantham and Niagara tps., Ont.

17949. Nov. 8.—Authorizing Campbellford, Lake Ontario and Western Ry. (C. P. R.) to build bridge across Front street in Trenton, Ont.

17950. Nov. 7.—Refusing application of Borden municipality, Sask., to extend Sheppard street across C.N.R.; and authorizing municipality to cross C.N.R., just east of west switch.

17951. Nov. 5.—Refusing application of C.P.R. for approval of station at mileage 17.5, Virden-McAuley branch; and approving location at mileage 21.5, Virden-McAuley branch, Man.

17952. Nov. 8.—Authorizing C.P.R. to divert highway adjoining west boundary of s.w. ¼ sec. 5, tp. 11, r. 10, w. 4 m., southwesterly, to connect with highway adjoining south boundary s.e. ¼ sec. 6, tp. 11, r. 10, w. 4 m., Alta.

17953. Nov. 8.—Approving Campbellford, Lake Ontario and Western Ry. (C. P. R.) plan for bridge at mileage 129.68, Hope tp., Ont.

17954. Nov. 8.—Authorizing G.T.R. to build additional track across Thompson road, Bertie tp., Ont.

17955. Nov. 8.—Authorizing G.T.R. to extend siding for Vineland Canning Co., Vineland, Ont.; and to build an additional siding.

17956. Nov. 5.—Authorizing N. St. C. & T. Ry. to build its Beamsville extension across eight highways in Clinton tp., Ont.

17957. Nov. 5.—Approving revised location James Bay and Eastern Ry., mileage 20.43 to 21.40 from Roberval, Que.

17958. Nov. 8.—Authorizing C.P.R. to take certain lands in Notre Dame de Grace ward, Montreal.

17959. Nov. 5.—Directing V. V. & E. Ry. & Nav. Co. to protect its railway between Ocean park and White rock as follows: One night watchman between mile posts 123 and 125, and one night watchman between mile posts 125 and 127; sectionmen to protect park during day time by going over the ground at least twice a day.

17960. Nov. 9.—Approving location C.N.R. through tp. 2, rgs. 6-8, w. 2 m., Sask., mileage 0.00 to 8.02.

17961. Nov. 8.—Directing G.T.R. to provide an electric bell at Woodbine avenue, Toronto.

17962. Nov. 8.—Authorizing North American Smelting Co. to build aerial tramway and electric power transmission line over C.N.O.R. in Loughborough tp., Ont.

17963. Nov 9.—Authorizing C.P.R. to lay sewer and water pipes across East Kildonan road or Kelvin avenue, and Bird's Hill road or Panet road, Man., and amending order 17391, Aug. 30.

17964. Nov. 7.—Authorizing C.P.R. to build spur for J. H. Preston Planing Mills Co., Medicine Hat, Alta.

17965. Nov. 8.—Relieving M.C.R. from providing further protection at sixth concession road, near Leamington, Ont.

17966. Nov. 8.—Approving G.T.P. Branch Lines Co. location of station at Frobisher, Sask.

17967. Nov. 8.—Approving revised grade of G.T.P. Branch Lines Co. from mileage 21 to 23, Cornwallis municipality, Man.; and rescinding order 17758, Oct. 14.

17968. Nov. 8.—Approving location and plans of G.N.R. station and detention house at Rossland, B.C.

17969. Nov. 5.—Extending until April 30, 1913, the time within which the C.N.O.R. install the permanent interlocking plant where it crosses G.T.R. and C.P.R. near Ottawa.

17970. Nov. 5.—Refusing application C.P.R. for order rescinding order 16838, June 20, dispensing with services of night watchman where C.N.O.R. crosses St. Lawrence and Ottawa Ry., east side of Rideau river, near Ottawa, Ont.

17971. Nov. 11.—Approving location C.N.O.R. station grounds at Chisholm, Ont.

17972. Nov. 8.—Relieving G.T.R. from providing further protection at highway three miles east of Brighton, Ont.

17973. Nov. 11.—Authorizing C.P.R. to build its Swift Current southeasterly branch across highways at mileage 69.29; and to divert a highway.

17974. Nov. 11.—Amending order 17921, Oct. 31.

17975. Nov. 11.—Authorizing C.N.O.R. to build across Cormanville street, North Bay, Ont.

17976. Nov. 14.—Extending until Nov. 28, time within which British Columbia Electric Ry. Co. may appeal to Supreme Court of Canada from order 17840, Oct. 14; and in meantime staying all proceedings under said order.

17977. Nov. 2.—Authorizing G. T. P. Branch Lines Co. to build extension of industrial spur in Yorkton, Sask.

17978, 17979. Nov. 12.—Approving revised location G.T.P. Ry., mileage 108.8 to 111.29, and from mileage 157.51 to 170.84, east of Prince Rupert, B.C.

17980, 17981. Nov. 12.—Approving G.T.P. Branch Lines Co. station sites and stations at Duff, Sask., and at mileage 142, Regina-Boundary branch, Sask.

17982. Nov. 12.—Authorizing G.T.R. to build siding for Canadian Billings & Spencer, Welland, Ont.

17983, 17984. Nov. 13.—Authorizing C.N.O.R. to build across Sixteen-mile creek, Trafalgar, tp., Ont., mileage 23.45 west from Toronto, and across road between con. 2, Westmeath tp., and con. 2, Pembroke tp., Renfrew, Ont.

17985, 17986. Nov. 12.—Authorizing C.N.R. (Vegreville-Calgary extension) to build over Secondary Canal A, sec. 2, mileage 247.5, and over Secondary Canal B, south branch, mileage 238.7.

17987, 17988. Nov. 12.—Authorizing C.N.R. to construct Calgary southerly branch across road between secs. 6 and 7, tp. 21, r. 88, w. 4 m., and under road between sec. 25, tp. 21, r. 29, and sec. 30, tp. 21, r. 28, w. 4 m.

17989, 17990. Nov. 12.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to build bridge 54.05, in Richmond tp., Ont., and approving revised location from mileage 61.87 to 64.09.

17991. Nov. 12.—Authorizing C.P.R. to build spur for McPherson Fruit Co., Calgary, Alta.

17992. Nov. 11.—Authorizing C.P.R. to divert certain highways, and to build across certain roads in Hussar, Alta.

17993. Nov. 12.—Authorizing C.P.R. to build Kerrobert northeasterly branch across 15 [illegible] to 35.15.

17994. Nov. 12.—Authorizing city of Vernon, B.C., to extend Lyons street across C.P.R.

17995. Nov. 12.—Approving rearrangement of siding from G.T.R. and C.P.R. into exhibition grounds, West Toronto.

17996. Nov. 12.—Authorizing Kettle Valley Ry. to open for traffic the portion of its railway from Merritt easterly 29 miles.

17997. Nov. 12.—Directing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to build live-stock pass for N. Bellyou, in Murray tp., Ont.

17998. Nov. 12.—Directing M.C.R. to install an electric bell at highway crossing one mile east of Shedden, Ont.

17999. Nov. 15.—Authorizing C.P.R. to open for traffic new second track, St. Constant to St. Claude, Que., mileage 24.46 to 26.6.

18000. Nov. 13.—Directing C.P.R. to demolish or remove baggage room at Farnham, Que., before June, 1913.

18001. Nov. 13.—Authorizing C.P.R. to build sidings for Davenport Coal Co. at Burmis, Alta.

18002. Nov. 13.—Authorizing C.N.R. to build across C.P.R. in Moose Jaw, Sask.

18003. Nov. 11.—Approving C.N.R. plan of structures to be erected at crossing of Park road, Manitoba street, and 2nd and 3rd crossings of Moose Jaw creek, Sask.

18004. Nov. 13.—Approving location C.N.O.R. station grounds at Fitzroy Harbor, Ont.

18005. Nov. 13.—Authorizing C.N.O.R. to build across two roads in Fitzroy tp., Ont.

18006. Nov. 12.—Authorizing C.N.O.R. to build across road in St. Leonard de Port-Maurice parish, Que.

18007. Nov. 13.—Approving location James Bay and Eastern Ry., station grounds at Dufferin, Que., mileage 30.7 from Roberval; and rescinding order 16344, April 18.

18008. Nov. 14.—Authorizing G.T.P. Branch Lines Co. to build Prince Albert branch across highway in rural municipality 312, Sask.

18009, 18010. Nov. 11, 13.—Authorizing G.T.P. Branch Lines Co. to build Moose Jaw northwest branch across 22 highways, mileage 48.55 to 67.85; and build Calgary-Boundary branch across 8 highways, mileage 82.5 to 90.3.

18011. Nov. 9.—Authorizing Niagara, St. Catharines and Toronto Ry., to build across Carlton and Niagara streets, Grantham tp., Ont.

18012. Nov. 14.—Varying order 16846, June 25, to provide that Bartlett avenue be maintained, at grade, over C.P.R. and C.N.O.R. in North Toronto; that Ossington avenue and Christie street subways be built with 14 ft. clear headway; that Albany avenue be not reopened and Huron street be not opened across said lines, but that Bridgeman avenue be opened and graded through to Bathurst street.

18013. Nov. 12.—Extending until May 1, 1913, time within which Hull Electric Co. equip all rolling stock in use by it of 37 ft. or over in length, or weighing 35,000 lbs. or more, with power brakes, to be approved by the Board.

18014. Nov. 8.—Directing C.P.R. to file within 30 days plans of gates directed to be erected at McTavish street, Fort William, Ont., and to be operated by day and night watchmen.

18015. Nov. 6.—Directing C.P.R. and G.T.R. to protect from 6.30 a.m. to 6.30 p.m. daily by a watchman, crossing at George street, Toronto.

18016. Nov. 6.—Refusing application of T. H. and B. Ry. to cross at grade, Stanford avenue, Hamilton, Ont., with two branch lines or spurs.

18017. Nov. 6.—Directing T. H. and B. Ry., to protect by day and night watchmen, crossings at O'Reilly street and Ferguson avenue, Hamilton, Ont.

18018. Nov. 14.—Approving location C.P.R. station at Severn Falls, Ont.

18019, 18020. Nov. 14.—Authorizing C.P.R. to build spur for Neilson Furniture Co., Calgary, Alta., and crossover track opposite V. V. and E. Ry. and Nav. Co.'s freight sheds, to connect with G.N.R. at New Westminster, B.C.

18021. Nov. 14.—Approving revised location G.T.P. Branch Lines Co., Tofield-Calgary branch in sec. 10, tp. 50, r. 19, w. 4 m.

18022. Nov. 15.—Authorizing G.T.R. to build siding for Canada Furniture Manufacturers, Wiarton, Ont.

18023. Nov. 13.—Authorizing Oshawa Ry. to build branch line from end of present track on Bruce street, Oshawa, Ont., to property of Bricks, Limited, and to cross C.N.R., and Toronto and Eastern Ry. tracks.

18024. Nov. 15.—Recommending to Governor-in-Council for sanction, agreement of amalgamation of Western Dominion Ry. Co. and Alberta Pacific Ry. Co.

18025. Nov. 15.—Approving Nipissing Central Ry. standard passenger tariff C.R.C. 8.

18026. Nov. 15.—Authorizing C.P.R. to take for construction of siding oertain lands at Leslie station, Ont.

18027. Nov. 15.—Authorizing C.P.R. to open for traffic its Moose Jaw northwesterly branch from Rosetown to Conquest, 34.3 miles.

18028. Nov. 16.—Authorizing C.P.R. to build bridge 50.0, Cascade subdivision, B.C.

18029. Nov. 15.—Authorizing C.P.R. to open for traffic Wilkie northwesterly branch from mileage 0 to 27.8, Sask.

18030, 18031. Nov. 15.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to build across five highways in Bowmanville, Ont., and bridge over road allowance in Brighton tp., mileage 95.25 from Glen Tay, Ont.

18032. Nov. 13.—Directing G.T.R. to build subway at highway leading to Cardinal, Ont.

18033. Nov. 14.—Authorizing G.T.R. to build siding for Standard White Lime Co. near Beachville, Ont.

18034. Nov. 15.—Authorizing C.N.R. to build across 38 highways on its Thunderhill branch, Sask.

18035. Nov. 15.—Authorizing C.N.O.R. to build across public road between lots 32 and 33, con. 15, Ferris tp., Nipissing district.

18036. Nov. 15.—Authorizing C.N.R. to build over public road between secs. 10 and 15, tp. 65, r. 22, w. 4 m.

18037. Nov. 15.—Authorizing Kettle Valley Ry. Co. to build across highway at station 383.57 northwest of Penticton, B.C.

18038. Nov. 15.—Authorizing C.P.R. and G.T.P.R. to operate their trains without being brought to a stop over crossing at mileage 6.1, sec. 6, tp. 39, r. 19, w. 3 m., Sask.

18039. Nov. 14.—Amending order 17628, Sept. 30, Canadian Northern Montreal Tunnel and Terminal Co.

18040. Nov. 11.—Dismissing application of G.T.P. and G.T.P. Branch Lines Co. for order relieving them from erecting gates in openings in right of way fences provided to give public ingress to and egress from station reservations on their lines.

18041. Nov. 12.—Dismissing application of Rockwood municipality, town of Stonewall and Stonewall district board of trade for order directing C.P.R. to grant commutation passenger tickets between Winnipeg and Stonewall.

18042. Nov. 11.—Dismissing complaint of board of trade of St. Boniface, Man., and Couture & Marion against C.P.R., alleging excessive charges on brick from St. Boniface to Yorkton, Sask.; also discrimination in favor of brick manufacturers of Portage la Prairie, Man.

18043. Nov. 11.—Refusing application of Midland Ry. of Manitoba and Winnipeg Trackage, Ltd., for order granting leave to Midland Ry. Co. to cross C.P.R. main industrial spur near Wall street, Winnipeg, with additional spur to Winnipeg Trackage, Ltd.

18044. Nov. 11.—Authorizing C.N.R. to build across C.P.R. in s.e. ¼ sec. 6, tp. 20, r. 28, w. 4 m., Alta.

18045. Nov. 11.—Amending order 17216, Aug. 15, re crossing of C.P.R. by G.T.P. R. Harte-Brandon branch.

18046. Nov. 11.—Authorizing C.P.R. to build an additional track and reconstruct existing track on its Emerson branch; and that it place watchman at Montcalm street, St. Boniface, Man.

18047. Nov. 11.—Directing C.N.R. to file within 30 days from this date plans showing a four-car siding between Baldur and Belmont, Man.

18048. Nov. 11.—Directing that North Norfolk municipality, Man., be added as party to application of R. Wallace et al., for subway between secs. 24 and 25, tp. 11, r. 12, w.p.m., Manitoba, and that the road be diverted by the C.P.R.

18049. Nov. 15.—Remitting penalties imposed under order 16823, June 20, 1912; and directing city of Montreal to commence construction of subway, under C. P. R., at Park avenue, not later than April 1, and complete same by October 1.

18050. Nov. 19.—Authorizing Kettle Valley Ry. to carry freight from Midway to Carmi, B.C., 46 miles.

18051. Nov. 18.—Approving bylaw of Niagara, Welland and Lake Erie Ry., authorizing C. J. Laughlin, Jr., Vice-President, or H. Rooke, Secretary, to prepare and file tariffs for freight and passenger traffic; and of telegraph tolls.

18052. Nov. 18.—Authorizing Government of Saskatchewan to build road north of secs. 13 and 14, tp. 22, r. 3, w. 3 m.

18053. Nov. 18.—Approving revised location of site of Burrard Inlet Tunnel and Bridge Co.'s bridge at Burrard inlet, B.C.; also width of opening spans of bridge across second narrows of Burrard inlet; and rescinding order 17565, Sept. 24, 1912.

18054. Nov. 18.—Authorizing M.C.R. to build sidings across and upon certain highways and lots in Crowland tp., Ont.; and approving lateral and overhead clearances.

18055. Nov. 15.—Relieving M.C.R. from providing further protection at crossing of Ferry road, just west of Victoria park station, Niagara Falls, Ont.

[illegible] Nov. [illegible] build across public road in St. Monique parish, Que.

[illegible]

18061. Nov. 19.—Approving proposed location C.N.O.R. station grounds at Desaulniers, Ont.

18062. Nov. 15.—Approving location C.N.R. through tps. 7-11, and rgs. 2-6, w.p.m., Mani- [illegible]

[illegible] Nov. [illegible] Branch Lines Co. to build its Prince Albert [illegible] burn branch across C.P.R.'s Weyburn-Lethbridge [illegible]

[illegible] Nov. [illegible] to build sidings for A. S. Nicholson, Burlington, Ont.; John Carey Lumber Co., Lindsay, Ont.; Dain Manufacturing Co., Welland, Ont., and National Concrete Mfg. Co., Ops tp., Ont.

18069. Nov. 20.—Authorizing C.P.R. to build additional track across 4 highways, mileages 16.0 to 23.0, Swift Current subdivision, Sask.

18070. Nov. 18.—Relieving C.P.R. from providing further protection at highway, Chemin de la Cote St. Elzear, 0.94 miles west of St. Martin Jct., Que.

18071. Nov. 18.—Approving revised location C.P.R. Sudbury-Sault Ste. Marie branch, as now constructed from mileage 20.73 to 21.40, Webb- [illegible]

18072-18077. Nov. 18.—Relieving C.P.R. from providing further protection at Tilson avenue, Tillsonburg, Ont. Authorizing C.P.R. to build two spurs for C. H. Wentz Lumber Co., Saskatoon, Sask.; two industrial spurs for city of division, Ont.; two spurs for Superior Elevator Co., Calgary, Alta.; bridge 2.65 on its Prescott subdivision, Ont.; two spurs for Superior Elevator Co., Fort William, Ont.; and spur for [illegible]

18078. Nov. 20.—Amending order 17958, Nov. 8, 1912, re C.P.R. taking certain lands in Notre [illegible] Montreal.

18079. Nov. 18.—Extending until May 31 time [illegible] C.P.R. [illegible] way crossing on lot 18, con. 7, Peel tp., Ont.

18080, 18081. Nov. 18.—Authorizing C.P.R. to divert highway adjoining north boundary, sec. 24, [illegible] northwesterly branch, and to build additional track across 18 highways, mileages 105.6 to 124, Moose Jaw division, Sask.

18082-18086. Nov. 20.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to build across road allowance, mileage 140.58 from Glentay; to build bridge across Ontario street and C.N.R.'s spur, Trenton, Ont.; to build bridge at mileage 159.3, Oshawa, Ont.; to build across road alllowance between lots 33 and 34, con. 1, Darlington tp., Ont., and to build across road allowance between lots 24 and 25, broken front con., Darlington tp., Ont.

18087. Nov. 11.—Directing C.N.R. to install gates, to be operated by day and night watchmen, at Gore street, Fort William, Ont.; to be in operation by March 1.

18088. Nov. 21.—Postponing, until and including Dec. 31, 1912, effective date of cartage tariff of Wabash Rd.

18089. Nov. 20.—Authorizing G.T.R. to operate cars and engines jointly with T.H. & B.R. upon and over Standard Underground Cable Co. siding, Hamilton, Ont.

18090-18093. Nov. 21.—Authorizing C.P.R. to build spur for Hunter Structural Steel Co., Toronto; Superior Match Co., Owen Sound, Ont.; G. A. Abbott, North Orillia tp., Ont., and Brick and Supplies, Ltd., Glenbow, Alta.

18094. Nov. 21.—Authorizing C.N.R. to build [illegible]

18095, 18096. Nov. 21.—Authorizing C.N.O.R. to build over Sanguinet street, Montreal, and across G.T.R. at Stoney Creek, Ont.

18097-18100. Nov. 19.—Establishing the collection and delivery limits of Dominion Express Co. in Macleod, Alta., and Windsor, N.S.; of Dominion and Canadian Express Cos., in Sackville, N.B., and of Dominion Express Co., and of Halifax and South Western Ry. express department in Yarmouth, N.S.

18101, 18102. Nov. 19.—Recommending to Governor in Council for sanction conveyance, dated Oct. 3, 1912, between Cap de la Madeleine Ry. Co. and C.P.R., and lease, dated Oct. 3, 1912, between Kingston and Pembroke Ry. Co. and C.P.R.

18103. Nov. 18.—Directing C.N.R. to build [illegible]

18104. Nov. 22.—Authorizing C.P.R. to build additional track across 2 highways in Swift Current subdivision, Sask. [illegible]

18105. Nov. 20.—Restoring, subject to certain conditions, order 16460, May 7, 1912, authorizing C.P.R. [illegible]

18106. Nov. 22.—Authorizing payment of $350 to Vancouver, Westminster and Yukon Ry., deposited to credit of Board to defray expenses of building a spur.

18107. Nov. 22.—Disallowing Supplement 6 to Central Ontario Ry.'s Special Joint Freight Tariff on Canned Goods, C.R.C. 298 (G.T.R.'s C.R.C. no. E.1928); and restoring tariff C.R.C. 298.

18108. Nov. 18.—Directing C.N.R. to appoint caretaker for station and freight shed at Beadle, Sask.

18109. Nov. 22.—Directing C.P.R. and C.N.R. jointly to publish and file tariff of through rates on grain products from Grenfell, Sask., via Regina, to Glenavon at 18½c. per 100 lbs., and 19c. per 100 lbs. to Kipling.

18110. Nov. 23.—Authorizing G.T.R. to build siding and spurs for Canadian Rumely Co., Toronto.

18111. Nov. 22.—Approving proposed location C.P.R. station at Sumas junction, B.C.

18112. Nov. 11.—Directing C.N.R. immediately to repair its fences along right of way between Dufresne and St. Ann, Man.

18113. Nov. 22.—Directing G.T.R. to provide proper accommodation for live stock at Mildmay, Walkerton, Brussels, Waterloo, Chesley and Elora, Ont.

18114. Nov. 25.—Authorizing T.H. & B.R. to build spur in Saltfleet tp., Ont.

18115. Nov. 25.—Authorizing Algoma Central and Hudson Bay Ry. to open for traffic its main line from mileage 93 to Hawk Lake junction, mileage 164.5.

18116. Nov. 25.—Authorizing Algoma Eastern Ry. to open for traffic its main line from Crean Hill, mileage 22.7, to West river, mileage 60.76.

18117-18119. Nov. 25.—Authorizing C.P.R. to open for freight traffic its Bassano to Irricana branch, between Bassano and Standard, Alta., 35.62 miles; to open for traffic new second track of Chapleau subdivision, from Cartier to Geneva, Ont., 3.6 miles, and to open for traffic its second track between White River and Tarpon, Ont., mileage 0 to 3.5.

18120. Nov. 25.—Amending order 17715, Oct. 10, 1912, re electric bell protection at Franktown road, Carleton Place, Ont.

18121. Nov. 26.—Suspending for 60 days from Dec. 1, 1912, pending a hearing of application by Board, the Pere Marquette Rd.'s Tariff C.R.C. 1539, and rate on coal from Detroit, Mich., to Windsor, Ont., as published in C.P.R. Supplement 9, to C.R.C. no. E. 1606.

18122. Nov. 13.—Amending orders 13509, April 26, 1911, and 13582, May 4, 1911, authorizing C.N.R. to use certain C.P.R. lands.

18123. Nov. 22.—Establishing collection and delivery limits of Canadian and Dominion Express Companies in Sussex, New Brunswick.

18124. Nov. 11.—Directing C.N.R. to file plan showing four car spur to be built at about mileage 48.3, sec. 9, tp. 15, r. 22, w. first principal meridian.

18125. Nov. 25.—Approving C.P.R. plan of proposed reconstruction of piers of bridge 6.3, Teeswater subdivision, Ont.

18126. Nov. 26.—Authorizing C.P.R. to build its Suffield to Kipp branch across highways from mileage 0 to 32.85; approving revised location of branch from mileage 0 to 21; and approving location of branch from mileage 21 to 32.85, Alta.

18127. Nov. 25.—Authorizing C.P.R. to operate trains over diamond at crossing with Hull Electric Ry. until Jan. 31, 1913.

18128, 18129. Nov. 26.—Authorizing C.P.R. to build two spurs crossing highways in Bull River, B.C., and the Government road in lot 118; also to build two spurs on Montreal Light, Heat and Power Co.'s property, Hochelaga, Que.

18130. Nov. 26.—Authorizing C.N.O.R. to build across two highways in Nipissing district, Ont.

18131 Nov. 26.—Authorizing G.T.P. Branch Lines Co. to build its Biggar-Calgary branch across highway in Prairiedale municipality, Sask.

18132. Nov. 25.—Extending for 30 days from date of order the time within which C.P.R. may complete spur to connect its present spur with present G.T.R. spur, which serves D. Maxwell and Sons agricultural implement works, St. Marys, Ont.

[illegible] Nov. [illegible] C.N.R. [illegible] second track [illegible]

18134. Nov. 28.—Approving Marconi Wireless Telegraph Co.'s tariffs of tolls C.R.C. 6 and 7, and cancelling C.R.C. 4.

18135. Nov. 27.—Directing that C.P.R. interswitching charges for any distance within and including 4 miles from Pointe-a-Carcy wharf do not exceed 1c. per 100 lbs., minimum $3 a car, to or from private sidings, and 1½c. per 100 lbs., minimum $5 a car, to or from public team tracks; to become effective not later than Dec. 9, 1912.

18136. Nov. 28.—Extending until Dec. 15, 1912, time within which Dominion Atlantic Ry. shall install electric bell at highway a short distance east of Berwich station, N.S.

18137. Nov. 28.—Authorizing Algoma Eastern Ry. to build spur to Mond Nickel Mine, Denison tp., Ont.

18138. Nov. 27.—Authorizing Michigan Central Rd. to build bridge as part of no. 1 Government drain, Tilbury East tp., Ont.

18139. Nov. 28.—Approving location C.N.O.R. station at Newburg, Ont.

18140. Nov. 27.—Authorizing Can. Nor. Montreal Tunnel and Terminal Co. to build across Vertu road, St. Laurent parish, Que.

18141. Nov. 27.—Authorizing C.N.R. to build Morris-Portage branch across C.P.R. Souris branch of C.P.R. in Manitoba.

[illegible] Ont.

[illegible] G.T.R. siding to Cleveland Sarnia Saw Mills Co., Sarnia, Ont.

18145. Nov. 28.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to build [illegible]

[illegible] for traffic its second main line track from l'Acadie to St. Constant, Que., mileage 24.46 to [illegible]

[illegible] Lake Ontario and Western Ry. (C.P.R.) to build bridge across 3rd Depot lake, near Parham, Ont.

18148. Nov. 28.—Authorizing C.P.R. to build spur for Booth Lumber Co., Etobicoke tp., Ont.

18149. Nov. 26.—Rescinding order 18040, Nov. 15, 1912, in so far as it authorizes crossing of Liberty street by Campbellford, Lake Ontario and Western Ry. in Bowmanville, Ont.

18150. Nov. 27.—Authorizing C.P.R. to build two spurs in Sherbrooke, Que.

18151. Nov. 28.—Authorizing Campbellford, Lake Ontario and Western Ry. to build across highway in Brighton tp., Ont., at mileage 99.15.

18152. Nov. 27.—Authorizing C.P.R. to build spur for Monarch Lumber Co., Saskatoon, Sask.

18153. Nov. 30.—Postponing to and including Dec. 31, 1912, effective date of the Wabash Rd.'s Supplement 1 C.R.C. 635, and item 10 in C.R.C. 654.

18154. Nov. 29.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to build road diversion to connect with road allowance in Hope tp; and build road diversion at mileage 130.21 from Glentay, Ont.

18155. Nov. 28.—Authorizing C.P.R. to build spur for Stewart Sheaf Loader Co., Winnipeg.

18156. Nov. 28.—Recommending lease, Oct. 2, 1912, between Quebec Central Ry. and C.P.R., to the Governor in Council for sanction.

18157. Nov. 29.—Authorizing C.P.R. to open for traffic its Lauder extension from Tilston to Alida, mileage 28.7 to 54.72.

18158. Nov. 29.—Authorizing C.P.R. to open for traffic following portions of new second track in Ontario:—Crete to Sudbury, mileage 75.7 to 78.0, Cartier subdivision; Devon, mileage 132.6, Chapleau subdivision, to Esher, mileage 6.9, White River subdivision; Depew to White River, mileage 126.5 to 131.8, White River subdivision; Heron Bay to Peninsula, mileage 55.5 to 64.2, Schreiber subdivision; Fire Hill to Ruby, mileage 55.0 to 59.4, Nipigon subdivision; Navilus to Hedge, mileage 120.5 to 124.6, Nipigon subdivision.

18159. Nov. 28.—Authorizing C.P.R. to build bridge to carry proposed additional tracks across waterworks aqueduct, Ottawa, Ont.

18160. Nov. 29.—Authorizing C.P.R. to build spur for L. A. F. and F. G. Crepeau, St. Henri de Mascouche parish, Que.

18161. Nov. 29.—Approving revised location C.P.R. from sec. 32, tp. 6, r. 19, w. 4 m., for 24.74 miles, to sec. 32, tp. 6, r. 15, w. 4 m., Alberta.

18162. Nov. 29.—Authorizing C.P.R. to divert highway between s.e. ¼ sec. 4, tp. 40, r. 19, w. 3 m., and n.e. ¼ sec. 33, tp. 39, r. 19, w. 3 m., Saskatchewan.

18163. Nov. 28.—Authorizing C.P.R. to build spur for the D. E. Adams Coal Co., Winnipeg.

18164. Nov. 28.—Approving proposed location C.P.R. station at Dorion, Ont.

18165. Nov. 29.—Authorizing Esquimalt and Nanaimo Ry. to build on its Comox extension over Trent river, B.C.

18166. Nov. 28.—Authorizing Qu'Appelle, Long Lake and Saskatchewan Ry. to build spur for Cushing Bros. Co., Regina, Sask.

18167. Nov. 28.—Authorizing G.T.R. to build siding for Atlas Glass Works, St. Pierre, Que.

18168. Nov. 28.—Authorizing G.T.R. to rebuild bridge over public road between cons. 7 and 8, North Dumfries tp., Ont.

18169. Nov. 29.—Approving location G.T.P.R. station at Pocahontas, Alta.

18170. Nov. 29.—Extending for one year from Dec. 1, 1912, order 12723, dated Dec. 6, 1912, re building of C.N.O.R. across Hurdmans road, Nepean tp.

18171. Nov. 29.—Authorizing C.N.R. to divert public road between secs. 35 and 36, tp. 41, r. 28, w. 2 m., on its Vonda northerly line.

18172. Nov. 28.—Authorizing C.N.R. to build across 20 highways on its Goose Lake extension. [illegible]

18173. Nov. 29.—Directing C.P.R. to build highway crossing over its Arrow Lake branch at boundary of Revelstoke, B.C.

18174. Nov. 28.—Approving plan and specifications of Toronto Eastern Ry. standard pile and frame trestle.

18175. Dec. 2.—Authorizing town of Bonfield, Ont., to build highway across C.P.R.

18176. Nov. 30.—Authorizing C.N.R. to build across and divert public road between secs. 21 and 22, tp. 31, r. 15, w. 4 m., on its Goose Lake extension.

18177. Nov. 30.—Approving location Canadian Northern Montreal Tunnel and Terminal Co.'s railway and tunnel in Montreal, from Lagauchetiere street station 139 + 79.7 to station 477 + 17.9

18178. Nov. 30.—Permitting C.P.R., G.T.R., C.N.R. and M.C.R. companies to increase from Dec. 15, 1912, to March 31, 1913, both inclusive, car service or demurrage toll from $1 to $2 a day for first 24 hours, and $3 a day for each succeeding 24 hours, beyond free time allowed by order 906, Jan. 25, 1906, for loading and unloading cars.

18179. Nov. 30.—Relieving C.N.R. from providing further protection at highway about 7 telegraph poles north of mileage 58, Parry Sound subdivision.

18180. Dec. 2.—Recommending lease, Oct. 2, 1912, between St. Marys and Western Ontario Ry. and C.P.R., to Governor in Council for sanction.

18181. Nov. 30.—Authorizing C.P.R. to build 2 spurs for Builders Supply Co., Winnipeg.

18182. Nov. 30.—Authorizing Esquimalt and Nanaimo Ry. to build spur for Canada Mosaic Tile Co. at Victoria West, B.C.

18183. Dec. 2.—Amending order 18024, dated Nov. 13, 1912, by changing its date to Nov. 16, 1912.

18184. Nov. 30.—Authorizing G.T.R. to build sidings for Dyment Mickle Lumber Co., in Fenelon tp., Ont.

18185. Dec. 2.—Relieving G.T.R. from providing further protection at crossing of road about a mile north of Golden Lake, Ont.

18186. Dec. 2.—Directing G.T.R. to build siding for Carroll Bros., Humberstone, tp., Ont.

18187. Dec. 2.—Authorizing Empire Limestone Co., Ltd., to build tunnel under Carroll Bros. siding in Humberstone tp., Ont.; and repealing order 17007, July 13, 1912.

18188. Dec. 2.—Relieving Central Ontario Ry. from providing further protection at highway, short distance south of Wellington, Ont.

18189. Dec. 3.—Appointing A. Sullivan, of Winnipeg, barrister, to make inquiry and take evidence necessary to show whether or not the portion of the Winnipeg Electric Ry. to the C.P.R. shops is profitable.

18190. Nov. 30.—Extending until June 1, 1913, time limited by sec. 4, chap. 61, of the acts 7-8, Ed. VII., for approval of White Pass and Yukon Route tolls for telegraph messages between all points in Canada; and allowing tolls authorized to be charged under acts 7-8, Ed. VII., chap. 61.

18191. Nov. 30.—Extending tariffs of telephone tolls of the North American Telegraph Co. until June 1, 1913.

18192. Nov. 30.—Extending until June 1, 1913, time limited by sec. 4, chap. 61, of acts 7-8, Ed. VII., for approval of Canadian Northern Telegraph Co.'s messages, and allowing tolls authorized to be charged under said acts.

18193. Nov. 30.—Extending until June 1, 1913, time limited by sec. 4, chap. 61, of acts 7-8, Ed. VII., for approval of G.T.P. Telegraph Co.'s tolls, with exception of tolls between local offices, on Ottawa division, in Ontario and Quebec, and between them and Swanton, Vt., approved by order 11153, July 12, 1910; and allowing tolls authorized to be charged under acts 7-8, Ed. VII., chap. 61.

18194. Dec. 2.—Directing G.T.R. to keep all cars away from crossing just east of Jordan station, Ont., in both directions, for 100 ft.

18195. Nov. 30.—Extending tariff of telephone tolls of Bell Telephone Co. until June 1, 1913.

18196. Dec. 3.—Approving location C.N.R. through tp. 26, r. 7, w. 3 m., Sask., mileage 54.05 to 61.32.

18197. Dec. 3.—Approving location G.T.P. Branch Lines Co.'s Moose Jaw northwest branch, mileage 67.86 to 79.02, Sask.

18108. Nov. 30.—Extending until June 1, 1913, time limited by sec. 4, chap. 61, of acts 7-8, Ed. VII., for approval of G.N.W. Telegraph Co.'s tolls between points west of North Bay, also to and from points west of North Bay and to points east thereof, and east of and including Windsor, Ont., and allowing tolls which it was authorized to charge under said acts.

18199. Nov. 12.—Permitting Winnipeg Electric Ry. to lay and maintain tracks through subway under C.P.R. tracks on McPhillips street, Winnipeg.

18200. Dec. 3.—Directing C.P.R. to provide farm crossing in east ½ of lot 23, con. 11, Beckwith tp.

18201. Dec. [illegible]—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to build its Glentay to Cobourg line over C.N.O.R. at mileage 95.1 from Glentay by overhead structure.

18202. Dec. 3.—Certifying that correction to show station grounds at Bayside in plan of Campbellford, Lake Ontario and Western Ry. Glentay to Cobourg line is allowed.

18203. Dec. [illegible]—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to build across road allowance in Hope tp., mileage 133.38 from Glentay.

18204. Dec. 2.—Authorizing G.T.R. to build siding for Empire Cotton Mills Co., near Welland, Ont.

18205. Dec. 2.—Authorizing G.T.P. Saskatchewan Ry. to connect its Weyburn branch with G.T.P. Branch Lines Co.'s Regina-Boundary line at Talmage, Sask.

18206. Dec. 2.—Approving proposed location G.T.P. Branch Lines Co.'s station in sec. 124, tp. 1, r. 3, w. 2 m., Sask.

18207. Dec. 3.—Authorizing G.T.P. Ry. to operate trains over portion of railway between mileage 164 and 176.8, east of Prince Rupert, B.C., and amending order [illegible], 1912.

18208. Dec. 2.—Temporarily approving G.T.P. Standard Freight Mileage Tariff, C.R.C. 12, between stations between Thornton, Alta., and Tete Jaune, B.C., inclusive.

18209. Dec. 3.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to build across road allowance between Haldimand and Cramahe tps., Ont., mileage 106.17 from Glentay; and eliminating item 10 of order 17361, Aug. 29, 1912.

18210. Dec. 3.—Suspending, pending hearing of application, the rate of 40c. a net ton on coal from Detroit, Mich., to Windsor, Ont., as published in M.C.R. Supplement 14 to Tariff C.R.C. 1288.

18211. Nov. 6.—Approving location C.N.O.R. through York and Scarboro tps., Ont., from mileage 0 to 7.60 from Yonge street.

18212. Nov. 6.—Directing T.H. & B.R. to cut down hill immediately east and south of railway at Gerrie's crossing.

18213. Nov. 6.—Authorizing London Street Ry. Co. to cross C.P.R. at Adelaide street, London, Ont.

18214. Nov. 22.—Authorizing G.T. Pacific Ry. to open for traffic its line between Fitzhugh, mileage 1027.8, and Tete Jaune Cache, mileage 1095.3.

18215. Dec. 4.—Authorizing local improvement district 18, w. 4, to build road across Calgary and Edmonton Ry. in east ½ sec. 20, tp. 35, r. 28, w. 4 m., Alta.

18216. Dec. 4.—Relieving British Columbia Electric Ry. from providing further protection on it Lulu island branch at Townsend road, Point Grey.

18217. Dec. 4.—Approving location of Canadian Northern Ry. Craven northeasterly line through tps. 20-21, r. 21-20, w. 2 m., Sask., mileage 0 to 8.79.

18218. Dec. 4.—Authorizing C.N. Ontario Ry. to connect with C.P.R. in Westmeath and Pembroke tps., mileage 82.02 to 82.61.

18219. Dec. 4.—Authorizing C.N. Alberta Ry. to operate trains over G.T. Pacific Ry. crossing in s.e.¼ sec. 31, tp. 53, r. 10, w. 5 m., Alta., for construction purposes only.

18220. Dec. 4.—Authorizing G.T.R. to build siding and spurs for Dominion Wood and Lumber Co. in Himsworth tp., Ont.

18221, 18222. Dec. 4.—Authorizing G.T.R. to build sidings for Kirkfield Portland Cement Co., Raven Lake, Ont., and for Canada Grip Nut Co., St. Johns, Que.

18223. Nov. 21.—Authorizing C.P.R. to open up Thirteenth avenue, Estevan, Sask., across its tracks and station grounds.

18224. Dec. 4.—Authorizing C.P.R. to build spur for Standard Chemical Iron and Lumber Co., Montreal.

General order 98. Dec. 6.—Respecting provision of heated refrigerator cars on railways in eastern Canada. This order is given in full on another page.

18225. Dec. 4.—Ordering C.P.R. to install a 12 in. pipe for drainage under its tracks in Vaudreuil, Que.

18226. Dec. 5.—Recommending to Governor in Council for sanction lease, of Oct. 2, 1912, between Alberta Central Ry. and C.P.R.

18227. Dec. 3.—Authorizing C.P.R. to build spur for Alex. Bremner, Ltd., in St. Felix de Valois parish, Que.

18228. Dec. 4.—Approving Campbellford, Lake Ontario and Western Ry. (C.P.R.) plan of structure across road near Parham, mileage 32.44.

18229, 18230. Dec. 5.—Authorizing Canadian Northern Ry. to build its Craven northeasterly line across eight highways, and its Maryfield branch across fourteen highways in Saskatchewan.

18231. Dec. 5.—Authorizing G.T.R. to build siding for Dunnville Brick and Tile Co., Moulton tp., Ont.

18232. Dec. 5.—Authorizing Palmerston tp., Ont., to divert and build road across Kingston and Pembroke Ry., near Mississippi station.

18233, 18234. Dec. 5.—Authorizing C.P.R. to build spurs for Calgary Terra-Cotta Co. near Calgary, Alta., and to Baynes lake across Government highway in Kootenay district, B.C.

18235. Dec. 6.—Amending order 18105, Dec. 6, re C.P.R. branch at Merritt, B.C.

18236. Dec. 7.—Approving British America Ex. Co.'s bylaw authorizing H. J. Herrold, General Agent, to prepare and issue tariffs of tolls.

18237. Dec. 7.—Approving Canadian Northern Ry. location through tps. [illegible] and [illegible], w. 2 m., Sask.

18238. Dec. 7.—Authorizing C.P.R. to build bridge 129.65, White river subdivision, Lake Superior division.

18239. Dec. 4.—Authorizing Toronto Power Co. to carry transmission line across G.T.R. and Wabash Rd., Thorold tp., Ont.

18240. Nov. 23.—Dismissing application of North Edmonton village and others for opening up Kelly avenue, Edmonton, Alta.

18241, 18242. Nov. 18, 19.—Authorizing city of Brandon, Man., to build its single track municipal railway across Canadian Northern Ry. at Thirteenth and First streets.

18243. Dec. 9.—Authorizing C.P.R. to build its Swift Current southeasterly branch across highway adjoining north boundary of sec. 27, tp. 12, r. 13, w. 3 m., Sask.

18244. Nov. 26.—Dismissing application of Tees and Persse, et al., to rescind order 17398, re C.P.R. spur from Princess street, Winnipeg.

18245. Nov. 22. Ordering Canadian Northern Ry. to build shelter and platform at Légal, Alta.

18246. Dec. 2.—Dismissing Vancouver and Nanaimo Coal Mining Co.'s complaint that Esquimalt and Nanaimo Ry. refuses to handle private coal cars over its main line.

18247. Nov. 28.—Dismissing application of corporation of Delta, B.C., to rescind orders relating to River road.

18248. Nov. 29.—Dismissing Pacific Machinery and Supply Co.'s complaint against first class rating of Canadian freight classification for band saws.

18249. Dec. 2.—Authorizing Esquimalt and Nanaimo Ry. to erect gates at Esquimalt road, Victoria, B.C.

18250. Nov. 28.—Authorizing British Columbia Transport Co. to cross Great Northern Ry. opposite water lots 94 and 97, New Westminster, B.C.

18251. Nov. 29.—Dismissing application of Imperial Rice Milling Co., Vancouver, B.C., for reductions from freight rates on rice and broken rice from Vancouver to points east of and including Calgary, Alta., to Winnipeg, Man., inclusive.

18252. Nov. 28.—Extending for five months from date time for completion by C.P.R. of station at Salmon Arm, B.C., required by order 17306.

18253. Nov. 29.—Extending for two months from date time within which British Columbia Electric Ry. be allowed to appeal from order 17840, re carrying certain streets over V.V. & E. Ry., overhead, in Vancouver.

18254. Nov. 22.—Authorizing Edmonton, Dunvegan and British Columbia Ry. to lay rails across Canadian Northern Ry. on sec. 33, tp. 55, r. 25, w. 4 m., pending installation of permanent crossing authorized by order 17148.

18255. Nov. 29.—Ordering Great Northern Ry. to extend by 100 ft., siding at Western Paper Mills, Sapperton, B.C.

18256. Dec. 12.—Extending to June, 1913, time for C.P.R. to file telegraph tolls applying west of Sudbury, Ont.

18257. Dec. 9.—Approving platform for Windsor Plaster Co. on Dominion Atlantic Ry. at Brooklyn, N.S.

18258. Dec. 9.—Authorizing city of St. Thomas, Ont., to lay sewer under Pere Marquette Rd. on London and Port Stanley gravel road.

18259. Dec. 11.—Extending to Jan. 15, 1913, time within which G.T.R. is required to install gates at King and Sherbrooke streets, Peterboro, Ont.

18260. Dec. 9.—Authorizing Winnipeg Electric Ry. to build double track across C.P.R. spur on Talbot avenue, Winnipeg.

18261, 18262. Dec. 9, 11.—Authorizing C.P.R. to build bridge 17.1 on its Cowichan lake branch, B.C., and bridge 124.7 over Gage's creek, near Port Hope, Ont.

18263. Dec. 7.—Approving Campbellford, Lake Ontario and Western Ry. (C.P.R.) plans of bridges to be built at mileage 157.47 and 157.75, East Whitby tp., Ont.

18264. Dec. 10.—Authorizing C.P.R. to build spur for Northern Sand and Gravel Co., Milner, Man.

18265. Dec. 9.—Authorizing C.P.R. to build highway diversion to join road allowance on west boundary of sec. 12-11-10, w. 4 m.

18266. Dec. 9.—Authorizing C.P.R. to cross highways on its Weyburn-Lethbridge branch, Sask., mileage 112.1 to 131.43.

18267. Dec. 9.—Authorizing C.P.R. to build extension to siding, and additional spur in Victoria park, for city of Calgary, Alta.

18268. Dec. 9.—Authorizing C.P.R. to build extension to branch line in block 13, Fort William, Ont., for Fenton Elevator Co.

18269. Dec. 9.—Authorizing C.P.R. to build additional track across St. Louis street, Farnham, Que.

18270. Dec. 10.—Recommending to Governor in Council for sanction, agreement between Georgian Bay and Seaboard Ry. and C.P.R.

18271. Dec. 9.—Authorizing C.P.R. to build temporary track for one year on its Virgin northeasterly branch across East Kildonan road and Winnipeg Electric Ry. in Kildonan parish, Man.

18272. Dec. 10.—Ordering C.P.R. to provide farm crossing for S. Y. Brockman, Roseberry tp., B.C.

18273. Dec. 11.—Approving C.P.R. plan showing extension to bridge 45.8, McAuley subdivision, Man.

18274. Dec. 7.—Authorizing Canadian Northern Ry. to build its Bienfait-Estevan branch across C.P.R. Sault line in n.w. ¼ sec. 13-2-8, w. 2 m.

18275. Dec. 7.—Approving Canadian Northern Ontario Ry. station grounds at Meadowside.

18276. Dec. 7.—Approving Canadian Northern Ontario Ry. location through Deseronto, mileage [illegible] to [illegible].

18277. Dec. 10.—Authorizing Canadian Northern Quebec Ry. to build across public road in lot 27, con. 3, Arundel tp., Que.

18278. Dec. 12.—Authorizing G.T.R. to rebuild bridge 73 over Cheshire creek, mileage 136.56, district 15, Middle division, Ont.

18279. Dec. 11.—Authorizing Canadian Northern Pacific Ry. to build across Esquimalt and Nanaimo Ry. Cowichan lake branch, mileage 74.5, Cowichan lake district, B.C.

18280. Dec. 12.—Approving C.P.R. plan showing details of trestle on extension to spur for Spanish River Pulp and Paper Mills Co., at Sturgeon Falls, Ont.

The Canadian Northern Railway's Montreal Tunnel.

S. P. Brown, M. Am. Soc. C.E., M. Am. Soc. M.E., Managing Engineer, Mackenzie, Mann and Co., and Chief Engineer, Canadian Northern Montreal Tunnel and Terminal Co., read a paper on tunnelling before the Canadian Railway Club in Montreal recently in which he dealt with the subject most exhaustively, covering its history and the questions of classification, surveying, design, ventilation, signals, tracks, construction, plant, excavation, and linings very thoroughly. Following are extracts which refer particularly to the C.N.R.'s Montreal tunnel, which he places in class 2 of the three classes into which he divides tunnels.

Class 2.—Entries into cities, where natural surroundings make tunnels imperative, where city ordinances prohibit grade crossings, where land values do not allow of a private right of way for an open cut with bridges at street crossings, or where grades or cost of construction and maintenance make an elevated viaduct inadvisable or impossible.

The Canadian Northern is just completing its transcontinental system, for which terminal facilities in Canada's principal city are essential, especially as this city is the main eastern seaport during the busiest half of the year. Montreal's natural location, between the St. Lawrence river and Mount Royal, made the problem of entry appear complicated. To enter from either end of this narrow strip meant a detour that was undesirable, and might possibly have resulted in two separate stations for the east and west bound traffic. Grade crossings were out of the question. Cut, cut and cover subway, or elevated viaduct would have necessarily been of considerable length, which would have been difficult and expensive in many ways. The natural alternative was a tunnel; and as by developing the country back of the mountain, suburbanly, for Montreal's rapidly increasing population, much of the expense of the improvements could be covered, it was the only logical course. Furthermore, the topography of the city—combined with the distribution of business activity of different sorts—made the actual terminal location, yards, etc., equally logical and simple.

The line of the Canadian Northern Montreal Tunnel and Terminal Co., from its junction with the main line of the Canadian Northern Quebec Ry.—near the Jacques Cartier Union Ry.—is depressed through the new town of Mount Royal to the tunnel portal, where it passes under the C.P.R. belt line, about a mile from the latter's Outremont yard. From this point the tunnel goes down at a 0.6% grade, in an almost due easterly direction, to the McGill College grounds, where it curves into McGill College avenue, which leads to the main passenger terminal, situated in the blocks between Cathcart and Lagauchetiere streets and Ste. Monique and Mansfield streets. The grades and elevations are such that this tunnel passes under St. Catherine street, with ample room for a future rapid transit subway above it, and the tracks are able to be carried level through the station and over the lower town on the proposed viaduct, where a yard for light and perishable freight is contemplated, to connect with the proposed Harbor Commissioners' elevated and a possible bridge across the St. Lawrence river.

Two tracks will run both east and west from the main passenger station. The tunnel is something over three miles long, the viaduct about a mile long. The passenger station yard will be about a quarter of a mile long, with platforms over 1,000 ft. long and an area of about nine acres. Local passenger stations will be situated down town and back of the mountain, as traffic demands. The main yard will be located near the Back river, where the electrical transfer yard will also be situated. There will also be a delivery yard in Mount Royal and an elevated yard in the commercial part of Montreal.

The designs for the Mount Royal tunnel are not yet completed, but it is probable that both twin tunnels and double track sections will be used, depending on the ground. Where the rock is of the proper character to permit it, the tunnel may be left unlined, although this cannot yet be determined. The minimum clearance has been limited to 16½ ft. above the rail, but the standard tunnel clearance will be 17½ ft. The standard clearance in width is 6 ft. off the centre line of track, which may be slightly reduced near the bottom as, for instance, at station platforms.

In the twin tunnel, centre walk ways will be provided at about the level of the coach floors, and cross passages will be cut through the dividing wall, at intervals, for communication between the twin tubes. Refuge spaces are allowed for track men under the walk ways. The ducts will be carried in the centre wall. The relation of the train cross section to the tube area will be approximately 50%.

In the double track section the two tracks will be separated by the duct bench, which is the same height as the centre walk ways in the twin tunnel, so that in case of derailment one train cannot block both tracks.

The studies for electrification have not yet been completed, so that there is not much to be said on this subject. Owing to the climatic conditions outside the tunnel, it is improbable that a third rail will be used on the ground, which will probably force the adoption of some form of trolley. This means high voltage, either direct or alternating current. Great strides have been and are now being made in high voltage, direct current railway work and, until very careful and exhaustive studies have been completed, no decision can be made. This is important in the final design of tunnel cross sections, as the amount of head room for 10,000 volts alternating is quite different to that required for 1,500 volts direct current.

In the Mount Royal tunnel, where soft ground is encountered, a cap and post system of construction will probably be used, owing to the location of the rock surface: this running in general fairly near the roof line permits the full width timbering to be done without shifting posts, which rest directly on the rock. As fast as the roof excavation can be carried on in this manner, the arches will be built, so that the roof will be absolutely protected. After the arches are in, the lower excavation will be removed and arches underpinned, where necessary.

The plant for the Mount Royal tunnel will be quite complete. The compressor plants at each end consist of one direct connected cross compound unit of 2,200 cu. ft. per minute capacity, driven by a synchronous motor and three belt driven cross compound units of 1,100 cu. ft. per minute capacity, with induction motors. The power is three phase, 62½ cycles at 2,200 volts. Pumps, drills and some small motors are run by air. Most power used, however, is electrical. The drills used are the precussive type with the water attachment built largely of steel, to reduce their weight. Horizontal bars are used to support the drills, and carriages are being made to handle the full drilling outfit for each heading.

The muck cars are 3 ft. gauge, very low and narrow. They are built with a 3 ft. wheel base, 18 in. wheels and springs on the axles. Both gasoline and electric locomotives will be used. Part of the tunnel muck will be crushed for concrete stone and ballast; part being used for fill and subfoundation work. The crushers are gyratory and roll hammer types, to give the desired grades, and both revolving and oscillating screens will be used over the bins.

The cages used at the shafts are of the counter balanced automatic dumping types, with electric hoists. These are designed for a capacity of about 800 cu. yds. per day.

The shops consist of a blacksmith shop, equipped with an air hammer, shears, punches, drill sharpening machinery and the usual forges; machine shops equipped with large and small lathes, a shaper, radius drills, saws, pipe machine, emery and grindstones, etc.; carpenters shops, with band and circular saws and drill repair and testing shops, as well as garage for the maintenance, storage and repairs of automobiles and auto trucks.

The method of excavation adopted in the Mount Royal tunnel is a bottom centre heading, with breakups at intervals where the full sized tunnel section will be developed. The heading is driven by the horizontal bar method. Later, a carriage and other auxiliary apparatus is expected to be used, as described under plant. At the breakups, jumbo timbers will be placed in the heading so that traffic can be maintained and the upper portion of the tunnel stoped down on the top of this and run directly into cars in the heading by gravity. As many as these breakups will be opened as are found necessary to keep up with the heading progress.

The firing is done electrically, but an effort is being made to get some special fuses with electric igniters, by which the cut may be fired electrically, at the same time igniting the time fuzes of the relievers and line holes. This should give a better result than the ordinary time fuse method without its accompanying risk, and will relieve the men from the necessity of going back into the smoke to load the later rounds.

In the Mount Royal tunnel, at present, the average progress at the west end is 20 ft. per day. In the east end, where the ground is rather bad, requiring timbering, and where no shooting is allowed at night, on account of public annoyance, the average progress for the last two months was 12 ft. per day. Heading 9 x 12 ft., 4 cu. yds. per foot. No drill carriage; precussive drills used with water attachment. 24 in. gauge [illegible]

National Transcontinental Ry. Arbitration.—Sir Wm. Whyte has accepted the position offered him by the Dominion Government, with the consent of the G.T. Pacific Ry., as sole arbitrator in settling the points of difference between the Government and the company as to the operation of the Winnipeg-Lake Superior Jct. section of the National Transcontinental Ry. Involved in this question, M. Donaldson, Vice President, G.T.P.R., is reported as saying, Dec. 10, is the settlement of the point whether the shops at Transcona are part and parcel of the National Transcontinental Ry. Mr. Donaldson believed that possession of the shops would be taken Jan. 1, the details of the opening being aranged by G. W. Robb, Master Mechanic. An order-in-council will be passed making the appointment and defining Sir Wm. Whyte's powers as sole arbitrator. Sir William inspected the Transcona shops Dec. 17, and then went by special train over the portion of the N.T.R. east of Winnipeg on which rails have been laid.

Railway Development.

Projected Lines, Surveys, Construction, Betterments, Etc.

Alberta Interurban Ry.—[illegible] Minister of [illegible] route map of [illegible] Calgary to Cochrane, Alta., 45 miles.

The taxpayers of Calgary voted, Dec. 29, on a bylaw authorizing the city council to sign an agreement granting the company a right of way into the city, and on certain streets on certain conditions, for 25 years [illegible] Nov., 1912, pg. [illegible]

Algoma Central and Hudson Bay Ry.—The Board of Railway Commissioners has authorized the opening for traffic of the main line from mileage 93 to Hawk Lake Jct., mileage 164.5 from Sault Ste. Marie, [illegible] Dec., 1912, pg. 604.)

Algoma Eastern Ry.—The Board of Railway Commissioners has authorized the opening for traffic of the extension of the main line from Crean Hill, mileage 22.7, to West River, Ont., mileage 60.76. (Dec., 1912, pg. [illegible])

British Columbia and White River Ry.—Application is being made to the Dominion Parliament to extend the time within which the company may build the lines authorized by chap. 45 of the statutes of 1911. Barnard and McKeown, Montreal, are solicitors for applicants. (July, 1911, pg. 645.)

Buctouche Ry. and Transportation Co.—Application is being made to the Dominion Parliament to changing the name of this company to the Moncton and Northumberland Strait Ry. Co., and to authorize the building of the following additional lines:—From Richibucto to Chatham or Loggieville; from [illegible] to Cape Tormentine, N.B. F. G. Evans, Moncton, N.B., is General Manager.

The Minister of Railways has approved of route plan of a proposed extension of the Moncton and Buctouche Ry. from Buctouche to Richibucto, N.B., about 20 miles. The M. and B. Ry. is owned by the B. Ry. and T. Co., and the extension named is a section of the line authorized to be built [illegible] May, 1911, pg. 409.)

Burrard Inlet Tunnel and Bridge Co.—The Board of Railway Commissioners has approved [illegible] location plan of site of the proposed bridge at Burrard inlet, Vancouver, B.C., and of the revised plans of the bridge showing opening spans of 225 ft. each, rescinding the previous order.

Application is being made to the Dominion Parliament to extend the time within which the bridge and connecting railways may be built. (Nov., 1912, pg. 556.)

Calgary, Edmonton and Fort McMurray Ry.—Application is being made to the Dominion Parliament to incorporate a company with this title to build the following railways and to operate them by any motive [illegible] Edmonton, thence [illegible] Fort McMurray, [illegible] by the valleys of the Athabaska and the Slave rivers, to Fort Resolution on Great Slave lake; from near Fort Smith southwesterly to Fort Vermillion, thence southerly to Peace River Landing, and thence [illegible] Red Deer river north of the 52nd parallel to Red Deer. Christie, Green and Hill, Ottawa, are solicitors for applicants.

Canada Western Ry.—The Dominion Parliament is being asked to extend the time within which the lines authorized by chap. 69 of the statutes of 1909 may be built. Hough, Campbell and Ferguson, Winnipeg, Man., are solicitors for applicants. (Nov., [illegible])

Central Ry. of Canada.—We are officially advised that there is under construction a 38 mile section from Hawkesbury to South Indian, Ont., the contractors being C. J. [illegible] and Sons, London, Eng., and Montreal; and a 15 mile section from Ste. Agathe to Francestown, Que., the contract for which is held by H. Armstrong. A general contract has been let for the entire line from Montreal to Midland, but the two sections named cover all the mileage that has yet been brought to the construction stage. Tenders were received to Dec. 20, 1912, for 1,000,000 ties, to be delivered in quantities as directed at Ste. Agathe, Lachute, Montreal, Grenville, Que.; Hawkesbury, MacAlpine, Ottawa, South Indian, Carleton Place, Bannockburn, Fenelon Falls, Orillia and Midland, Ont. F. Stuart Williamson is Chief Engineer and General Manager. (Dec., 1912, pg. 604.)

Duluth and Northern Minnesota Ry.—J. [illegible], Vice President and General Manager, visited Fort William, Ont., recently, with some other officials, and is reported to have stated that the line would be extended to that point as soon as arrangements could be made, and that the route would be surveyed during the winter. The company's line starts from the Duluth and Iron Range Rd., at Knife River, 19.6 miles from Duluth, Minn., and runs by a rather circuitous route 62 miles northeasterly to Cramer, Minn.

Duluth, Winnipeg and Pacific Ry.—We are officially advised that track was laid on 73.4 miles of this line during 1912. This covers the entire line from Duluth to Silver Jct., Virginia, Minn., where connection is made with the section of the line extending to the Rainy River, opposite Fort Frances, Ont., at which point connection is made with the Canadian Northern Ry. by a bridge across the river.

Edmonton, Dunvegan and British Columbia Ry.—Tracklaying is in progress northerly from Edmonton, Alta., in the direction of Sturgeon River, which was reached early in December. Grading and bridge construction on the first 70 miles have been completed, and it was expected to have track laid on this mileage by Dec. 31. (Dec., 1912, pg. 604.)

Erie, London and Tillsonburg Ry.—The [illegible] map for this projected railway shows a line running north out of Port Burwell, thence direct northwesterly to Aylmer, then on to a junction with the G.T.R. main line from Hamilton, just east of London. The G.T.R. line over which the Wabash Rd. operates, is crossed at Aylmer; a little further on the Michigan Central is crossed, and the C.P.R. is crossed near Belmont. A. S. Going, of the G.T.R. staff, was the locating engineer. (Dec., 1912, pg. 604.)

Esquimalt and Nanaimo Ry.—We are officially advised that Moore and Pethick, Victoria, B.C., have been awarded the contract for grading and bridging a portion of the Courtenay extension, viz., from the Big Qualicum river, mileage 15.5 to Union Bay, mileage 34.79. The contract calls for the completion of the work by Aug. 31. A contract has also been let to C. Hoard, Victoria, for grading and bridging on the extension from mileage 34.79 to 40, the work to be completed by Mar. 31. (Dec., 1912, [illegible])

Fredericton and Grand Lake Coal and Ry. Co.—We are officially advised that track has been laid on this line as follows:—From Gibson, N.B., for 11 miles, and from the end of the New Brunswick Coal and Ry. Co.'s line near Minto, N.B., for seven miles in the direction of Gibson. Grading and [illegible] on the mileage between the two points to which track has been laid is well advanced. A. E. Trites and Son, Salisbury, N.B., have the contract. A branch line is to be built from mileage 0.5, near Gibson, to Marysville, three miles. The clearing and fencing on this branch have been done, but the contract for construction has not yet been let. H. W. D. Armstrong, Fredericton, N.B., is Chief Engineer. (Nov., 1912, pg. 556.)

Huron Lake Shore Ry.—Application is being made to the Dominion Parliament to incorporate a company with this title, to build a railway from Sarnia, north-easterly through Lambton, Huron, Bruce and Grey counties to Meaford, Ont. W. B. Converse, Montreal, is solicitor for applicants.

Intercolonial Ry.—We are officially advised that track has been laid on diversions of line as follows:—From Nelson to two miles east of Chatham, N.B., 8.3 miles; and from George river to Sydney Mines, N.S., 9 miles.

The new station at Chatham, N.B., to replace the one destroyed by the big fire of 1910, was opened Nov. 29.

Tenders are under consideration for the building of an addition to the freight car repair shop at Moncton, N.B.

The Minister of Railways stated in the House of Commons Dec. 4 that the report, plans and estimates for the proposed terminal improvements at Halifax, N.S., were in course of preparation and would be submitted to the House as soon as possible.

In reply to questions in the House of Commons, Dec. 4, the Minister of Railways said the government had authorized the carrying out of the following works for which appropriations had not been voted by parliament: A new connection between the I.R.C. and the C.P.R. at Ste. Rosalie Jct., Que., at an estimated cost of $2,000, on which work about $100 had already been expended. A rearrangement of tracks at Rimouski, Que., and other work at a cost of $2,685, on which $150 had already been expended. (Dec., 1912, pg. 604.)

Joliette and Lake Manuan Colonization Ry.—We are officially advised that the first section from Joliette to St. Michel des Saints, Que., 60 miles, is under construction, the contractor being R. J. Craig, Cornwall, Ont. A further section of 90 miles from St. Michel des Saints to Weymontachene, Que., on the National Transcontinental Ry., is under survey. J. N. Patton, St. Felix de Valois, Que., is Chief Engineer for the British Canadian Construction Co., which is financing the construction. (Aug., 1912, pg. 412.)

Kettle Valley Lines.—The Board of Railway Commissioners has authorized the carrying of freight on the line from Midway to Carmi, B.C., 46 miles. (Dec., 1912, pg. 605.)

Kingston and Pembroke Ry.—The only construction done on this line during the past year was the ballasting of about 10 miles, and the putting of a number of bridges and cement culverts. (June, 1912, pg. 300.)

Little Nation Ry.—Subscribers to the common stock of this projected railway were called upon to pay a further 10% of their subscriptions by Dec. 28, and shareholders who had not met two previous calls of 10% each, have been notified that proceedings will be taken to forfeit their rights to the shares subscribed for. (Dec., 1912, pg. 605.)

Manitoba-Ontario Ry.—The Dominion Parliament is being asked to incorporate a company with this title, to build a railway from Fort William, Ont., to the Lake of the Woods, and thence to Winnipeg, with a branch southerly to the International boundary, and another northerly to the National Transcontinental Ry. within the

Kenora district. Lewis and Smellie, Ottawa, are solicitors for applicants.

Medicine Hat, Alta.—Among the bylaws voted on on Dec. 27 was one authorizing the spending of $20,000 for spur tracks to industrial sites. (Oct., 1912, pg. 502.)

Moncton and Buctouche Ry.—See Buctouche Ry. and Transportation Co.

North Ry.—It has been announced in Montreal that an arrangement has been made by which the G.T. Pacific Ry. will be given running rights over the section of the line between Montreal and Bell river, Que., the junction with the National Transcontinental Ry. It is reported that arrangements have been completed for starting construction on this section of the line during the current month. This will not consist of general construction work, but will be selected pieces of the line on which there is a lot of rock work, on which blasting is best done during the winter. (Dec., 1912, pg. 605.)

North Shore Ry. and Navigation Co.—We are officially advised that the following extensions of the line are under survey:—From Adamsville to Snow Shoe lake on the National Transcontinental Ry., N.B., 20 miles; and from Beersville to Richibucto Cape, N.B., 30 miles. C. Dean, Adamsville, N.B., is Superintendent. (June, 1912, pg. 301.)

Pacific and Hudson Bay Ry.—The Dominion Parliament is being asked to extend the time for the building of this projected railway, as set out in the statutes of 1910. Power is also sought to increase the capital to $25,000,000, and to enter into agreements with the Pacific Great Eastern Ry., the Edmonton, Dunvegan and British Columbia Ry., and British Columbia and Dawson Ry. W. F. Brougham, Vancouver, B.C., is solicitor for applicants. (Dec., 1912, pg. 605.)

Pacific Great Eastern Ry.—Grading has been started on the extension of the Howe Sound and Northern Ry., which has been acquired by the P.G.E. Ry., in the direction of Lillooet, B.C. P. Welch, the general contractor, is reported to have sublet the following mileages:—Four miles to foot of Bear Mountain, P. Welch; next seven miles, McAll and Wilson; next five miles, not yet let; next five miles, McGowan and Murchison; next five miles, —. McGillivray; next five miles, McAlpin and Cunningham. At the Lillooet end of the line 42 miles have been sublet in sections to the following:—D. D. McPhee & Co.; Kennedy and Welsh; Nicholson and Timlick; Burns-Jordan and Co.; Peter Salvas, J. A. Welsh. It is reported that a further 32 miles will be let as soon as the wagon roads, now under construction, are completed. (Dec., 1912, pg. 605.)

Peace River Great Western Ry.—The Alberta Legislature is being asked to extend the time within which the lines authorized by the statutes of 1910 may be built. Short, Woods, Biggar and Collisson, Edmonton, Alta., are solicitors for applicants. (Dec., 1912, pg. 605.)

Prince Edward Island Ry.—Track has been laid, we are officially advised, from Harmony Jct., to Elmira, 9.9 miles. (July, 1912, pg. 339.)

Quebec Rapid Transit Ry.—Power to build the following additional lines is being asked from the Dominion Parliament:—From St. Gregoire of Montmorency to L'Ange Gardien, Chateau Richer, and Ste. Anne de Beaupre; to cross over to the Island of Orleans and a belt line round it; and to build bridges from the shores of the St. Lawrence river to the Isle of Orleans. (Dec., 1912, pg. 605.)

The Reid Newfoundland Co. is making extensive alterations at the station building and offices at St. John's, Nfld. The old baggage and express departments have been added to the general office and station accommodation, and new quarters have been provided for baggage and express. (Nov., 1912, pg. 558.)

Southern Central Pacific Ry.—The Dominion Parliament is being asked to extend the time within which the lines authorized by sec. 7, chap. 191 of the statutes of 1903, and by sec. 1, chap. 141 of the statutes of 1911, may be built; and to change the provisional directorate. Macdoune, Honeywell and Graham, Ottawa, are solicitors for applicants. (May, 1911, pg. 413.)

Timiskaming and Northern Ontario Ry.—The new roundhouse at Hearst, Ont., construction on which was started June 15, is reported to have been completed.

Rapid progress is being made with the construction of the Elk Lake extension. The tracklaying gang reached the Montreal river Dec. 11, and J. L. Englehart, Chairman of the Commission, reported, Dec. 12, that it was expected to have the steel laid to Elk Lake by Dec. 22. (Dec., 1912, pg. 605.)

Vancouver, Westminster and Yukon Ry.—J. Hendry, President, is quoted as stating that there is no truth in the report that the C.P.R. had acquired this charter, and further, he said, "I may say that no negotiations are in progress looking for the acquisition of the charter. (Sept., 1912, pg. 451.)

Victoria Harbor Ry.—There has been deposited in the Land Registry Office at Victoria, B.C., plan, profile and book of reference of the proposed main line between stations 100 + 00 at Camel point to station 246 + 40 at Selkirk Water, including loops between stations 100 and 112 + 54.3 and station 100 and 112 + 46.4 and connection with Esquimalt and Nanaimo Ry. from station 00 + 00 to station 10 + 72.4, Rock bay, Victoria. H. J. Haffner is Chief Engineer. (Jan., 1912, pg. 23.)

The Canadian Pacific Railway's Enormous Rolling Stock Orders.

The C.P.R. during 1912 placed orders for rolling stock to the value of about $48,000,000, which is said to be double the amount ever ordered by any other railway system in North America in the same period.

When the orders are completely filled, the C.P.R. will have in commission 2,225 locomotives, 90,416 freight and stock cars of all kinds, 2,164 first and second class passenger cars, and 512 tourist sleepers, standard sleepers, diners and cafe cars, 1,383 conductors' vans, 4,329 boarding, tool and auxiliary cars and steam shovels—to be operated on over 12,500 miles of track.

The new equipment ordered during 1912 includes 467 locomotives, 26,653 box cars, 636 flat cars, 401 coal cars, 300 stock cars, 227 refrigerator cars, 94 first class sleepers, three compartment cars, 20 observation cars, 25 diners, 57 tourist cars, 117 first class and suburban cars, 138 baggage, mail and express cars.

Four motor cars, which will climb up the side of the mountain from Laggan, B.C., to the Lakes in the Clouds, will be placed in service—the tracks having already been laid—and will prove a great convenience to the tourists who invade that region yearly.

Out of the total expenditure the new locomotives cost over $9,000,000, the passenger cars nearly $5,250,000, and the freight and miscellaneous cars over $34,000,000. The equipment is being chiefly procured in Canada, but Canadian shops being unable to fill the orders in their entirety, the remainder had to be purchased in the United States, in order to obtain delivery within a reasonable time.

Canadian Northern Railway Earnings, Etc.

[illegible] net earnings [illegible] increases, [illegible] for 1911-12 [illegible]

	Gross Earnings	Expenses	Net Earnings	Increase
July	[illegible]	[illegible]	[illegible]	$133,000
Aug.	1,745,800	1,375,000	370,800	56,100
Sept.	1,671,500	1,248,000	423,500	[illegible]
Oct.	2,351,200	1,645,900	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]
Inc.	[illegible]	[illegible]	[illegible]	

[illegible] during Oct., 1911.

Approximate gross earnings [illegible] against $2,001,500 for Oct., 1911.

Canadian Pacific Railway Earnings, Etc.

Gross earnings, working expenses, net earnings, increases or decreases, compared with those of 1911, from July 1, 1912:

	Gross Earnings	Expenses	Net Earnings	Increase
July	[illegible]	[illegible]	[illegible]	[illegible]
Aug.	12,251,715.87	7,533,790.21	4,717,925.66	642,354 65
Sept.	[illegible]	[illegible]	[illegible]	[illegible]
Oct.	[illegible]	[illegible]	[illegible]	[illegible]
	$48,944,246 23	30,466,952.63	$18,477,293 60	$2,100,142 71
Inc.	7,603,446.71	5,503,304,00	2,100,142 71	....

Approximate gross earnings for Nov., $12,145,000 against $10,399,000 for Nov., 1911.

The mileage under operation was increased with the commencement of Nov., to 11,354.

Grand Trunk Railway Earnings, Etc.

The following figures show the earnings and expenses of the G.T.R., C.A.R., G.T. Western Ry. and D.G.H. & M.R. for Oct., 1912, compared with those for Oct., 1911:—

Grand Trunk Railway.

	1912.	1911.
Earnings	[illegible]	[illegible]
Expenses	[illegible]	[illegible]
	[illegible]	$ 912,395

Canada Atlantic Railway.

	1912.	1911.
Earnings	[illegible]	$206,488
Expenses	[illegible]	177,268
	[illegible]	[illegible]

Grand Trunk Western Railway.

	1912.	1911.
Earnings	[illegible]	$581,478
Expenses	[illegible]	444,631
	$139,600	$136,847

Detroit, Grand Haven and Milwaukee Ry.

	1912.	1911.
Earnings	[illegible]	$228,403
Expenses	[illegible]	168,989
	[illegible]	[illegible]

TRAFFIC RECEIPTS OF THE SYSTEM

[illegible]

	1912	1911	Increase
G.T.R.	$18,680,692	$16,961,251	$1,719,441
C.A.R.	[illegible]	[illegible]	[illegible]
G.T.W.R.	[illegible]	[illegible]	[illegible]
D.G.H. & M.R.	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]

Passenger Association Meetings. — The Niagara Frontier Summer Rate Committee will meet at the Chateau Laurier, Ottawa, January 21 to 23. On the first two days mentioned the representatives will arrange all details as far as possible, their report to be submitted to the general meeting Jan. 23 at 10 a.m. The Great Lakes and St. Lawrence River Rate Committee will meet at the same place immediately after the Niagara Frontier Summer Rate Committee's meeting. The International Water Lines Passenger Association will also meet in Ottawa on Jan. 23.

Quebec Bridge.—The shops at [illegible] near Montreal, in connection with the erection of the Quebec bridge, are practically completed. About 400 men will be employed preparing the steel work. W. P. Ladd, of the Canadian Bridge Co., Walkerville, Ont., will superintend the manufacture of the material, and W. B. Fortune has been appointed to superintend the erection.

Mainly About Transportation People.

SIR WM. WHYTE has been elected a governor of the Winnipeg Country Club.

W. [illegible], who died at Newark, N.J., recently, was an old G.T.R. official, formerly living in Montreal.

GEORGE BURNHAM, formerly President, Baldwin Locomotive Works, died in Philadelphia, Pa., Dec. 10, aged 95.

R. G. CHAMBERLIN, chief of the Vancouver city police force, has resigned to enter the C.P.R. service at Montreal.

MRS. E. F. SEIXAS, wife of the General Manager, Niagara, St. Catharines and Toronto Ry., died of angina pectoris, Dec. 9.

D. McNICOLL, Vice President, C.P.R., has declined to accept nomination for the position of mayor of Westmount, Que., for 1913.

LADY TYLER, widow of the late Sir Henry W. Tyler,, at one time President, Grand Trunk Ry., died in London, Eng., Dec. 8.

W. L. BEATTY, of M. Beatty and Son, Welland, Ont., manufacturers of dredges and contractors' plant, died there, Nov. 29, aged 71.

A. S. GOODEVE, a member of the Board of Railway Commissioners, was the principal speaker at the Canadian Club luncheon in Toronto, Dec. 9.

J. S. MACLAUCHLAN has been appointed Dominion Government engineer in charge of public works, on Vancouver Island, with office at Victoria, B.C.

J. L. ENGLEHART, Chairman, Timiskaming and Northern Ontario Railway Commission, has been elected a director of the Bank of Toronto.

J. E. DALRYMPLE, Vice President, G.T.R., and Mrs. Dalrymple have been spending some time recently in New York and other points on the Atlantic coast.

SIR DONALD MANN, Vice President Canadian Northern Ry., has been elected Honorary President of the newly organized Canadian Amateur Lacrosse Association.

J. T. LEGRAND, Bridge Engineer, G.T. Pacific Ry., Winnipeg, has been elected chairman, Manitoba branch, Canadian Society of Civil Engineers.

J. THOMSON, Superintendent, Canadian Transfer Co., Toronto, returned to Canada on the C.P.R. s.s. Empress of Britain, Dec. 7, after a short vacation in Scotland.

SIR DONALD MANN will close Fallingbrook, Toronto, for the winter, while Lady Mann and their son are in southern Europe, and will live at his former town house on St. George street.

P. J. DORAN, formerly well known in marine circles in Montreal, at one time representing the Thomson Line, died suddenly at the Jubilee rink, of which he was the owner, Dec. 7.

G. M. BOSWORTH, Vice President, C.P.R., and Mrs. Bosworth returned to Montreal, Dec. 9, from Great Britain, where Mrs. Bosworth christened the C.P.R. s.s. Empress of Asia at its launching.

F. SUTHERLAND, who retired from the position of Master Car Builder, G.T.R., about four years ago, died at Point St. Charles, Que., Dec. 7, aged 78. He entered the G.T.R. employ in 1855.

A. B. COMEAU, for a number of years travelling auditor on the Intercolonial Ry., died at St. Damien, Que., Dec. 5. He had been in failing health for some time, and was relieved from duty in Feb., 1912.

W. L. KELLOGG, formerly Superintendent of Motive Power, Pere Marquette Rd., Grand Rapids, Mich., has been appointed Superintendent of Motive Power, Missouri, Kansas and Texas Ry., St. Louis, Mo.

HON. J. S. HENDRIE, C.V.O., chairman of the railway committee during recent sessions of the Ontario Legislature, returned to Canada from Great Britain, Dec. 7, on the C.P.R. s.s. Empress of Britain.

G. O. Otty, K.C., has been appointed Chairman of the New Brunswick Public Utilities Commission in succession to the late D. McL. Vince, and A. B. Connell, K.C., Woodstock, has been appointed to fill the vacancy.

Two bundles of clothing, belonging to CAPT. SEALEY, until recently a Canadian Northern Ry. engineer, were found in the ice near Athabasca Landing, Alta., Dec. 3. It is feared that he was drowned.

J. W. SHARPE, Travelling Freight Agent, G.T.R., Hamilton, Ont., was married there Dec. 18, to Miss Ethel Warmington, until recently Secretary to J. Gray, General Agent, G.T.R., Hamilton. They went to California for a trip.

A. E. Rosevear,
Assistant to Vice President, Grand Trunk Railway.

F. PENNINGTON, a Wabash Rd. agent, is reported to be also interested with E. Pennington, President of the Minneapolis, St. Paul and Sault Ste. Marie Ry., in the heirship to the Muncaster peerage and estates, referred to in our last issue.

A. S. CHEEVER, for many years Superintendent, Fitchburg division, Boston and Maine Rd., Boston, Mass., has been appointed Assistant to the General Manager and will be assigned to special work in the operating department.

MRS. LICHTENHEIN, widow of A. Lichtenhein, who was the Galena-Signal Oil Company's Contracting Agent in Canada, and her family, have moved from New Rochelle, N.Y., to the Cliff Haven, 417 Riverside drive, New York city.

JOS. RAMSEY, JR., formerly of the Wabash Rd., has resigned as President and General Manager of the Ann Arbor Rd. He is succeeded as President by N. Erb, Chairman of the Board of Directors, and as General Manager by H. H. Harrison, Vice President.

C. N. ARMSTRONG, of Montreal, Vice Chairman, Central Ry. of Canada, who has spent most of his time in England for several years past, will, it is said, be the next conservative candidate in the Colne Valley division of Yorkshire for the House of Commons.

HOWARD JAMES, Director of Purchases, Great Northern Ry., and Vice President and General Manager, Great Northern Steamship Co., and S. B. PLECHNER, Purchasing Agent, G.N.R., were both killed, when their automobile upset, recently, near J. J. Hill's country home, adjacent to St. Paul, Minn.

W. C. HUNTER, formerly General Air Brake Inspector, Intercolonial Ry., afterwards Manager, New Brunswick Coal and Railway Co., and latterly railway sales representative for T. McAvity and Sons, St. John, N.B., has been appointed Manager, Record Foundry and Machine Co., Moncton, N.B.

SIR THOMAS TAIT, President, Fredericton Grand Lake Coal and Ry. Co., Montreal; H. J. FULLER, President, Canadian Fairbanks Morse Co., Montreal, and W. R. ALLAN, General Northwest Agent, Allan Line Steamship Co., Winnipeg, are directors of Atlantic Sugar Refineries, Limited, recently organized to operate at St. John, N.B.

A telegram received in Montreal, Dec. 3, stated that E. A. WILLIAMS, who resided there some years ago, had been killed in a street car accident in New Orleans. At first it was feared that the victim was E. A. Williams, formerly Superintendent of Rolling Stock, C.P.R., but enquiries showed that the latter was alive and well at Glen Ridge, N.J.

A. D. CARTWRIGHT, Secretary, Board of Railway Commissioners, is one of the executors of his late father, Sir Richard Cartwright, who left an estate of a net value of $83,239.90, the interest on which goes to his widow. After her death the estate is to be divided, the three daughters to receive $20,000 each, and the balance going to the six sons.

JOHN F. PIERCE, who has been appointed District Passenger Agent, Richelieu and Ontario Navigation Co., for New England territory and the maritime provinces, was born in Chatham, Ont., and prior to his present appointment, was for two years, Travelling Passenger Agent in New England territory, and for ten years chief clerk of the Traffic department.

A. E. ROSEVEAR, whose appointment as Assistant to the Vice President (Traffic) G.T.R. and G.T.P.R., Montreal, together with some biographical data, was given in our last issue, and whose portrait appears in this issue, was born at Montreal, Feb. 20, 1863. Prior to holding his present position he was Assistant General Freight Agent, G.T.R., from Apr. 20, 1908.

LORD FURNESS, of Furness, Withy and Co., Manchester Liners, Ltd., and Honorary President, Richelieu and Ontario Navigation Co., who died recently, in his will authorizes his trustees to expend, not exceeding £30,000, towards the founding of an institution for the training of boys for the mercantile marine service, with a view to their being engaged on vessels of the various fleets with which he had been associated.

A. P. BOLLER, of Boller, Hodge and Baird, Engineers, New York City, and Vice-President, American Society of Civil Engineers, died Dec. 9, aged 72. In the sixties he planned an International bridge over the Niagara river at Black Rock, which was not carried out owing to the collapse of the railway company in the same year. His firm designed the Algoma Central and Hudson Bay Ry.'s Montreal river viaduct, which was completed recently.

H. F. BRADLEY, whose appointment as Passenger Manager, Allan Line Steamship Co., Montreal, was announced in our last issue, was born at Waterville, Que., July 20, 1876, and entered Allan Line service in 1898, and was to 1906 attached to the head office in Montreal. He was appointed General Agent for Ontario, with office in Toronto, in 1906, which position he held to Feb., 1912, when he was appointed Assistant Passenger Manager.

C. B. WILKIE, whose appointment as Road Foreman of Engines, Canadian Division, Pere Marquette Rd., Port Huron, Mich., was announced in our last issue, was born near Lunenburg, N.S., Nov. 19, 1877, and entered railway service July 30, 1898, since when he has been, to Dec., 1898, in car shops and roundhouse, Lake Erie and Detroit Ry., Walkerville, Ont.; Dec., 1898, to the summer of 1900, fireman, same road; 1900 to Nov. 4, 1912, locomotive driver, same road and Pere Marquette Rd., the latter having absorbed the L.E. and D.R. in 1901.

Toronto Saturday Night published a portrait recently under which it put "GEORGE HERBERT SHAW, who has relinquished his post as Assistant General Freight Agent, Canadian Pacific Ry. lines west of Port Arthur, to become Traffic Manager of the Canadian Northern Ry." This is ancient history with a vengeance. Mr. Shaw "relinquished his post" with the C.P.R. in June, 1901, over 11 years ago, when he was appointed Traffic Manager, Canadian Northern Ry. In Feb., 1911, he was appointed General Traffic Manager, Canadian Northern Ry.

H. B. FLEMING, whose appointment as Assistant Superintendent, Halifax and St. John division, Intercolonial Ry., Moncton, N.B., was announced in our last issue, was born at Moncton, N.B., in 1858, and entered I.R.C. service in 1873, since when he has been, to 1874, in stationery stores department; 1874 to 1878, relieving operator and station agent; 1878 to 1879, relieving dispatcher at Truro, Moncton and Campbellton; 1879 to 1898, dispatcher, Halifax and St. John division, Moncton, N.B.; 1898 to Nov. 7, 1912, Chief Dispatcher, Springhill and St. John division.

G. A. STOKES, whose appointment as acting Terminal Superintendent, G.T.R., Toronto, was announced in our last issue, was born in Nassagawaya tp., Ont., July 23, 1879, and entered G.T.R. service, Nov. 15, 1897, since when he has been, to Oct. 15, 1898, operator, Listowel, Ont.; Oct. 15, 1898, to March, 1899, relieving agent; March, 1899, to April, 1907, agent, consecutively, at Harriston, Wingham, Wiarton and Brantford, Ont.; April, 1907, to Nov. 1, 1910, dispatcher, Stratford, Ont.; Nov. 1, 1910, to Sept. 13, 1912, Yardmaster, Don station, Toronto; Sept. 13 to Oct. 25, 1912, General Yardmaster, Toronto Terminals.

B. C. GESNER, heretofore Mechanical Expert, Galena Signal Oil Co., who has also been appointed Eastern Sales Agent for the company, was born at Cornwallis, N.S., Apr. 23, 1859, and entered Intercolonial Ry. service, Jan. 23, 1877, since when he has been, to Oct., 1882, fireman; Oct., 1882, to Sept., 1898, locomotive driver; Sept., 1898, to Oct., 1901, General Air Brake Inspector; Oct., 1901, to Dec., 1902, Master Mechanic, Stellarton, N.S.; Dec., 1902, to Apr., 1903, Air Brake Inspector; Apr., 1903, to Nov., 1912, Mechanical Expert, Galena-Signal Oil Co., with headquarters at Moncton, N.B. He is a medallist of the Imperial Service Order.

C. J. WILSON, whose appointment as Superintendent, district 3, Central division, Canadian Northern Ry., Winnipeg, was announced in our last issue, and whose portrait appears in this issue, has served the whole of his time spent in railway service, prior to his present appointment, in the U.S., having been telegraph operator and train dispatcher, Chicago, Milwaukee and St. Paul Ry.; dispatcher and trainmaster, Chicago, St. Paul, Minneapolis and Omaha Rd.; dispatcher, Assistant Superintendent and Division Superintendent, Northern Pacific Ry., and for the last nine years, Division Superintendent, Chicago, Rock Island and Pacific Ry.

HUGH SUTHERLAND, Executive Agent Canadian Northern Ry., Winnipeg, sustained a fracture of the left thigh by being thrown from his horse at Osborne street bridge, Winnipeg, Nov. 27. The lift span of the new bridge did not close by about 3 ins., so that the horse's foot caught in the opening, and as he pulled it out violently Mr. Sutherland was thrown over his head. After being taken home Mr. Sutherland was removed to the general hospital, where the fracture was reduced, and he was placed in a plaster cast, which will probably not be removed until well on in January. He is progressing favorably in every way, and is able to attend to his correspondence.

C. A. Dunham.
Signal Engineer, Grand Trunk Railway.

DONALD M. McINTYRE, K.C., whose appointment as Chairman, Ontario Railway and Municipal Board, Toronto, was announced in our last issue, is a native of Kingston, Ont., and a graduate in Arts of Queen's University. He was admitted a barrister in 1885 with honors and gold medal, and served on the Kingston city council, as alderman, from 1889 to 1905, with the exception of 1892, for which year he was elected mayor. He was appointed City Solicitor there in 1895, and acted in that capacity to the date of his present appointment. He was for many years a trustee of Queen's University, and a governor of the School of Mining, of which board he is chairman. He is also a governor of the Kingston General Hospital, and was chairman of the board in 1904 and 1905.

A. S. GOING, who has been appointed Engineer of Construction, G.T.R., Montreal, was Born in Portland, Ore., Apr. 7, 1860, and entered railway service in 1880, since when he has been, to 1881, instrument man, Oregon Ry. and Navigation Co.; 1881 to 1883, Assistant Engineer, Northern Pacific Ry.; 1884 to 1886, Assistant Engineer, Oregon Pacific Ry.; 1887, Resident Engineer, Seattle, Lake Shore and Eastern Ry.; 1888 to 1889, Resident Engineer, Northern Pacific Ry.; 1890 to 1902, in private practice in State of Washington and British Columbia; 1903, Division Engineer, Great Northern Ry.; 1904 to 1905, Exploratory Engineer for British Columbia, Grand Trunk Pacific Ry.; 1905 to 1907, Division Engineer, Minneapolis and St. Louis, Ry.; 1907 to Nov. 30, 1912, Locating Engineer in charge of surveys, reports, etc., G.T.R.

R. COLCLOUGH, whose appointment as Assistant to the General Superintendent, Intercolonial Ry., Moncton, N.B., was announced in our last issue, was born at Bic, Que., Feb. 24, 1871, and educated at Rimouski College and Laval University, graduating from the latter in arts in 1888. He entered I.R.C. service Dec. 9, 1889, since when he has been, to Nov., 1892, clerk in Superintendent's office, Moncton, N.B.; Nov., 1892, to Nov., 1901, private secretary to Chief Superintendent, General Manager and General Superintendent and Manager; Nov., 1901, to Oct., 1902, chief clerk, Manager's office; Oct., 1902, to June, 1911, clerk in General Manager's office and in the Managing Board's office; June, 1911, to May, 1912, chief clerk, General Superintendent's office; May to Nov. 7, 1912, Assistant Superintendent, Halifax and St. John division.

W. B. CRONK, whose appointment as General Superintendent, National Transcontinental Ry., Ottawa, was announced in our last issue, was born at Footville, Wis., Nov. 11, 1862, and entered railway service, Jan., 1878, since when he has been, to 1898, consecutively, operator, agent, dispatcher and chief clerk to Superintendent, Chicago and North Western Ry.; 1898 to 1900, dispatcher, Chicago, St. Paul, Minneapolis and Omaha Ry.; 1900 to 1902, chief clerk to General Superintendent and Division Dispatcher, Baltimore and Ohio Rd.; 1902 to 1903, chief clerk to General Superintendent, Chicago, Rock Island and Pacific Ry.; 1903 to 1906, in private business; 1906 to 1911, consecutively, dispatcher, Assistant Superintendent and Superintendent, C.P.R.; 1911 to Sept. 1, 1912, Superintendent, Grand Trunk Pacific Ry.; Sept. 1 to November, 1912, Superintendent of Transportation, National Transcontinental Ry., Winnipeg.

J. M. SHANLY, M. Can. Soc. C.E., Consulting Engineer, Montreal, who died there suddenly Nov. 28, was born at Waukegon, Ill., in 1857, and, after completing his education at Toronto university, moved to Montreal in 1878. He began his professional career under his uncle, the late Walter Shanly, and after spending several years on survey and construction work, was appointed Chief Engineer of the Beauharnois Jct. Ry. in 1887, and was subsequently Chief Engineer of the Montreal and Ottawa Ry., now the C.P.R. short line between those cities. He was subsequently engaged in the construction of the Central Counties Ry. (now partly the C.P.R.), the Baie des Chaleurs Ry., the Great Northern Ry. of Canada, the International Ry. of New Brunswick, and latterly he was engaged in connection with the Central Ry. of Canada. His connection with the Canadian Society of Civil Engineers, of which he was a councillor, dates from 1887.

S. BRUCE McCONNELL, A.M. Can. Soc. C.E., who has been appointed Assistant Engineer, C.P.R., Montreal, commenced railway engineering in the winter of 1897, as transitman on the Atlantic and Lake Superior Ry., since when he has been, April to May, 1898, transitman on location, Midland Ry. of Nova Scotia; May, 1898, to Apr., 1899, Resident Engineer on construction, same road; Apr. to June, 1899, transitman on location, Great Northern Ry. of [illegible] 1901: Assistant Engineer on water power development [illegible] Upper Saguenay river, Que.; Jan., 1901, to [illegible] Cuba; Jan. to June, 1902, locating engineer, South Shore Ry.; June to July, 1902, Assistant Engineer in charge of yard construction, C.P.R., North Bay, Ont.; July, [illegible] Resident Engineer, C.P.R., North Bay, Ont.; Sept., 1905, to Jan., 1910, Resident Engineer, C.P.R., Montreal; [illegible] 1912, Assistant Division Engineer, Eastern division, C.P.R., Montreal.

[illegible], General Manager, Canadian Northern Quebec Ry., Quebec and Lake St. John Ry., Halifax and South Western Ry., and Inverness Ry. and Coal Co., Montreal, died at Riverside, Cal., Dec. 13. He had been ill for some months, suffering from tuberculosis and diabetes, and spent most of the summer at Lethbridge, Alta. He returned to Montreal early in October, and after a short stay there went to California early in November. He was born at [illegible], N.B., Sept. 23, 1852, and entered railway service in 1867, since [illegible] to 1869, chainman, Western Extension Ry.; 1869 to 1870, assistant engineer, same road; 1870 to 1871, assistant engineer, Maine Central Rd.; 1871 to 1875, assistant engineer, Prince Edward Island Ry.; 1875 to 1876, engineer-in-charge, [illegible] Ry.; 1876 to 1877, assistant engineer, Intercolonial Ry.; 1877 to 1879, Principal Assistant Engineer, Eastern Extension Ry. of Nova Scotia; 1879 to 1881, Engineer, C.P.R., Winnipeg; 1881 to 1882, Division Engineer, Western division, C.P.R.; 1882 to 1883, Assistant Chief Engineer, same road; 1883 to 1885, acting Chief Engineer, same road; 1885 to 1886, Engineer, Alberta Ry. and Coal Co.; 1886 to 1888, Division Engineer, Great Northern Ry.; 1888 to 1890, Engineer, Foley Bros. and Guthrie, railway contractors; 1890 to 1894, General Superintendent, Alberta Ry. and Coal Co. and Great Falls and Canada Ry.; 1894 to May, 1899, Manager, same roads. From 1899 to 1906 he was engaged in railway contracting with Foley Bros. and Larson, of St. Paul, Minn. [illegible] 1907, [illegible] General Manager, Halifax and South Western Ry., and Inverness Ry. and Coal Co., and in March, 1909, he was also appointed General Manager, Canadian Northern Quebec Ry., [illegible] St. John R[illegible].

Railway Finance, Meetings, Etc.

Canadian Pacific Ry.—The Minister of [illegible] House of Commons, Dec. 4, that the President had informed him it was the company's intention to issue $60,000,000 of new stock under the authority [illegible] which the company had applied for the [illegible] No action had been taken upon this application.

Canada Southern Ry.—A new first and refunding mortgage has been signed to [illegible] consolidated 50-year 5% gold bonds, guaranteed both as to principal and interest by the Michigan Central Rd.

In connection with this issue, press [illegible] tion, stated that the M.C.R. had been acquired by the C.P.R. by an arrangement [illegible] River Rd.

Cap de la Madeleine Ry.—The Board of [illegible] the Governor in Council to approve of a conveyance, dated Oct. 3, 1912, transferring this line to the C.P.R.

The Central Ry. of New Brunswick, extending from Norton, on the Intercolonial Ry., to Minto, N.B., will be taken over by the C.P.R., Jan. 1. It will be operated in connection with the Fredericton and Grand Lake Coal and Ry. Co., which is now well advanced towards completion.

Grand Trunk Ry.—A London, Eng., cable says the underwriters have had to take 85% of the £1,000,000 4% debentures [illegible] recently.

Kingston and Pembroke Ry.—The Board of Railway Commissioners has recommended the Governor-in-Council to approve of a lease of this line to the C.P.R.

Quebec Central Ry.—By proclamation the Lieut.-Governor of Quebec has ratified the agreement for the lease of the Q.C.R. to the C.P.R. The Board of Railway Commissioners has recommended the Governor-in-Council to sanction the lease. These are the final steps necessary in the transfer of the line to the C.P.R.

D. M. McIntyre, K.C.,
[illegible] Ontario Railway and Municipal Board.

Quebec Oriental Ry.—A trust deed dated [illegible] 22, 1912, made between the company and the Royal Trust Co., Montreal, to secure an issue of 5% prior lien mortgage bonds on the Matapedia section was deposited with the Secretary of State at Ottawa, Dec. 3.

Rutland Rd.—The appellate division of the New York Supreme Court, Dec. 13, reversed the decision of a lower court which forbade the transfer of the control stock of the R. Rd., held by the New York Central and Hudson River Rd., to the New York, New Haven and Hartford Rd.

St. Marys and Western Ontario Ry.—The Board of Railway Commissioners has recommended the Governor in Council to sanction the leasing of this line to the C.P.R.

Shuswap and Okanagan Ry.—Application [illegible] to the Dominion Parliament to [illegible] the company to enter into agreements with the C.P.R.; to lease its line to the C.P.R., and to increase its bonding powers. The line has been operated by the C.P.R. for many years.

Stanstead, Shefford and Chambly Ry.—Following are the officers and directors for the current yeear:—President, S. W. Foster; Vice President, E. H. Fitzhugh; Assistant Secretary and Treasurer, W. H. Chaffee; other directors, E. J. Chamberlin, E. C. Smith, G. C. Jones, G. E. Robinson, G. Stevens and J. P. Noyes; Secretary and Treasurer, H. E. Allen.

Temiscouata Ry.—Net earnings for September, $4,389; aggregate net earnings for three months ended Sept. 30, $20,866.

Timiskaming and Northern Ontario Ry.—The Commissioners have paid the Ontario Government $510,000 on account of the net earnings of this line for the past financial year.

Dominion Government Expenditures on Railways.

The public accounts for the year ended Mar. 31, 1912, show that in addition to the consolidated fund expenditure the following outlays, chargeable to capital account, were made on railways:

Intercolonial Ry.	$1,710,448.56
Prince Edward Island Ry.	128,041.91
National Transcontinental Ry.	21,110,352.05
Hudson Bay Ry.	159,632.00
Quebec Bridge	1,153,778.27
Total	$24,262,252.79

The following amounts were paid during the year as subsidies in aid of the construction of railways:—

Central Ontario Ry.	$ 826.17
St. Marys and Western Ontario Ry.	365.00
Quebec, Montreal and Southern Ry.	23,885.70
Canada and Gulf Terminal Ry.	65,249.75
Quebec and Lake St. John Ry.	27,570.00
Canadian Pacific Ry.	108,608.00
Atlantic, Quebec and Western Ry.	91,279.60
Algoma Central and Hudson Bay Ry.	133,584.00
Canadian Northern Quebec Ry.	86,468.03
Thessalon and Northern Ry.	6,112.00
Quebec and Saguenay Ry.	101,992.00
Kettle River Valley Ry.	148,800.00
Vancouver and Lulu Island Ry.	61,760.00
Total	$856,500.25

The following bonds have been guaranteed by the Dominion under the authority of various acts of parliament:

Canadian Northern Ry. (1903)	£ 1,923,287	0	0
Canadian Northern Ry. (1908)	1,622,586	19	9
Canadian Northern Ontario Ry. (1911)	7,493,835	12	4
Canadian Northern Alberta Ry. (1911)	647,260	5	6
Grand Trunk Pacific Ry. (1905)	7,200,000	0	0
	£18,886,969	17	7

In addition £1,688,000 of G.T.P. Ry. guaranteed bonds have been pledged by the company against advances obtained for construction purposes. There has been paid to the G.T.P. Ry. $4,994,416.66 out of the consolidated fund to meet the obligations of the Crown to the company under par. 5 of the schedule to chap. 24 of the statutes of 1904, the "implementing" paragraph.

C.P.R. Lands.—The C.P.R. Co. has announced that in future it will not sell any farm lands to speculators, but only to bona fide settlers from North America, the British Isles and Northern Europe. The purchase price will be payable in instalments extending over 20 years, instead of 10 as heretofore. The company will also loan each settler up to $2,000, to be repaid in instalments extending over 20 years, with interest at 6%, and will sell the settlers live stock and poultry at cost price.

Wanted.—By an experienced Railroad man who has held positions as Yardmaster, Chief Dispatcher and Superintendent for the past 20 years, a position on Western Roads preferred; first class reference will be furnished.

Address, Box 1948, Canadian Railway and Marine World, Toronto, Ont.

Canadian Pacific Railway, Construction, Betterments, Etc.

St John, N.B.—It was reported in St. John, N.B., that about 1,000 acres of land has been bought in the vicinity of Lancaster, adjoining the city, for the C.P.R. and that changes are to be made in the route of the New Brunswick Southern Ry., so as to give it direct access into St. John. There are other reports that there is some likelihood of a new line being built across New Brunswick which will give the C.P.R. a direct line to Moncton, whence access is to be obtained to Halifax over the Intercolonial Ry.

Second Track, Etc., on Farnham Subdivision.—The Board of Railway Commissioners has authorized the opening for traffic of the second track from St. Constant to St. Claude, mileage 24.46 to 35.9, and from mileage 42.46 at Highlands, Que., to the south switch, mileage 43.91. The second span of the new bridge to carry the double track over the St. Lawrence river at Highlands was floated into position Nov. 26. The bridge will consist of four spans, each 408 ft. long. The bridge is being built by the Dominion Bridge Co. The foundations for the new bridge over the river at St. Johns, Que., have been completed.

Montreal to L'Epiphanie.—The Dominion Parliament is being asked to authorize the building of a line from south of Forsythe street, Hochelaga ward, Montreal, northerly to a junction with the company's line near L'Epiphanie, Que.

Ottawa, Northern and Western Ry.—Application is being made to the Dominion Parliament to extend the time within which the projected line from Maniwaki to James Bay, and the proposed extension to Lake Timiskaming, Que., may be built.

Interprovincial and James Bay Ry.—The surveys being made on this railway are under the charge of C. W. P. Ramsay, Engineer of Construction, C.P.R., Montreal. (Nov., pg. 558.)

Campbellford, Lake Ontario and Western Ry.—Application is being made to the Dominion Parliament to increase the company's bonding powers.

North Toronto Union Station.—The C.P.R. plans for a union station at North Toronto have been approved by the Canadian Northern Ry., and it is said that tenders will shortly be invited.

Bolton-Palgrave to Campbellville.—Application is being made to the Dominion Parliament for authority to build a line from the Toronto-Sudbury line between Bolton Jct. and Palgrave, through Peel and Halton counties to a junction with the Toronto-Windsor line near Campbellville, Ont.

Guelph and Goderich Ry.—Application is being made to the Dominion Parliament to extend the time within which the company may build the branch lines authorized by chap. 81 of the statutes of 1904.

Collingwood Southern Ry.—Application is being made to the Dominion Parliament to extend the time for the building of the lines authorized by chap. 77 of the statutes of 1907. A. T. Thompson, Ottawa, is solicitor for applicants.

Sudbury Branch Revision.—The Board of Railway Commissioners has approved of revised location of the Toronto-Sudbury branch between mileage 20.73 and 21.40, and mileage 31.76 and 34.76, Webbwood subdivision.

Lake Superior Division Second Track.—The Board of Railway Commissioners has authorized the opening for traffic of the second track as follows:—Cartier to Geneva, 3.6 miles; White River and Tarpon, 3.5 miles; Crete to Sudbury, 3.2 miles; Devon to Eaper, 4.3 miles; Depew to River, 5.3 miles; Heron Bay to Peninsula, 8.7 miles; The Hall to Baro, 4.1 miles; Navin to Hedge, 4.1 miles.

Western Lines.—The Dominion Parliament is being asked to authorize the building of a line from near Snowflake, Man., westerly for about nine miles; a line from the present terminus of the Gimli branch northerly for about 60 miles to the north shore of Lake Winnipeg, thence northwesterly to the Little Saskatchewan river; from about 50 miles east of Sterling, Alta., to the Alberta Ry. and Irrigation Co.'s line near Sterling; from near Cayley on the Macleod branch to near Burmis on the Crowsnest subdivision. It is also desired to obtain an extension of time for the building of the following lines:—From Stonewall or Teulon, Man., northwesterly to the east shore of Lake Manitoba near the north of the boundary of tp. 25; from tps. 32-34, ranges 21-23, west of 2nd meridian, to Prince Albert, Sask., 130 miles; from Dysart or Lipton, southeasterly to a junction with the next mentioned line; from near Tantallon, Sask., to Craven on the Regina northerly branch; from sec. 12, tp. 9, range 26, west 4th meridian, on the Crowsnest branch westerly along the north side of the Old Man river to sec. 36, tp. 7, range 4, west 5th meridian, Alta.

Bergen Northeasterly.—The Minister of Railways has approved of route map for the extension of the line at Bergen, Man., for 9.92 miles northeasterly.

Lauder Extension.—The Board of Railway Commissioners has authorized the opening for traffic of the Lauder extension from Tilston to Alida, Man., mileage 28.7 to 54.72.

Manitoba and Northwestern Ry.—The Dominion Parliament is being asked to extend the time within which it may build the following lines: From Yorkton to Prince Albert, Sask.; from Russell to the northwest boundary of Manitoba; from between Portage la Prairie and Arden to the Manitoba boundary; from between Westbourne and Beautiful Plains northwesterly to Lake Dauphin on Duck mountains; from between Theodore and Insenger to tp. 32, range 18 or 19, west 2nd meridian, and from Bredenbury to Kamsack, Sask.

Sutherland to Saskatoon, Sask.—General Superintendent Taylor was recently quoted as stating that the company's engineers were completing surveys for the building of a second line from Sutherland to Saskatoon, Sask., that tenders would be let and work would be started thereon in the spring.

Second Track Work Near Moose Jaw.—The Board of Railway Commissioners has authorized the opening for traffic of the second track from Belle Plains, mileage 117.0 to Pasqua, mileage 127.6, on the Moose Jaw subdivision, and the second track from Secretan to Chaplin, Sask., mileage 44.9 to 54.0 west of Moose Jaw.

Moose Jaw Northwesterly Branch.—The Board of Railway Commissioners has authorized the opening of the Moose Jaw northwest branch from Outlook to Conquest, Sask., 9.3 miles. This mileage includes the bridge across the South Saskatchewan river. The Lacombe branch of the C. and E. Ry. is being extended easterly to a junction with this line at Kerrobert, and the Board of Railway Commissioners has authorized the temporary operation of this extension from Coronation to Consort, 32 miles.

Swift Current Southeasterly.—The Board of Railway Commissioners has approved of location plans of the Swift Current southeasterly branch with the Moose Jaw southwesterly branch, mileage 45 to 101.3.

Swift Current-Bassano Line.—The Minister of Railways has approved of route maps for the line from Swift Current northwesterly, 11.34 miles, and for the line from Bassano easterly, 118.1 miles.

Wilkie to Anglia, Sask.—The Board of Railway Commissioners has authorized the opening for traffic of the branch running southeasterly from Wilkie to Anglia, Sask., 35.3 miles.

Wilkie-Cutknife Branch.—The Board of Railway Commissioners has extended until July 1, 1913, the time within which the C.P.R. may operate its Manitou lake branch, from its Pheasant hills branch in sec. 6, tp. 40, r. 19, west third meridian, to sec. 32, tp. 43, r. 21, w. 3 m., mileage 0 to 27.8, between Wilkie and Cutknife, Sask.

Humberstone Coal Mine Spur.—The Board of Railway Commissioners has authorized the building of a spur line at mileage 788.21 from Winnipeg to the Humberstone coal mine, near Cardell, Sask.

Canadian Pacific Railway Hotel under construction at Calgary, Alta.

Bassano-Irricana Branch.—The Board of [illegible] 35.62 miles.

Alberta Central Ry.—[illegible] 1909, and chap. 50, statutes of 1911.

Alberta Central Ry.—[illegible]

[illegible] Deer, Alta., was suspended for the season Nov. 30. It is reported that construction [illegible] erly from Red Deer early in the spring.

Alberta Ry. and Irrigation Co.—The Dominion Parliament is being asked to extend the time within which the company may build the various branch lines authorized.

Calgary-Vancouver Second Track.—The Minister of Railways has approved route maps of revision of route on the second track work between Calgary, Alta., and Vancouver, B.C., as follows:—Grade revisions west of Calgary, 21 miles; grade revisions Ross Peak to Milk Creek, B.C., 20 miles; grade revisions Chase to Salmon Arm, B.C., 25 miles.

[illegible] engineer, who has been retained in an advisory capacity by the C.P.R. in connection with the double tracking of the line between Vancouver and Calgary, has completed an inspection of the route accompanied by F. F. Busteed, of Kamloops, B.C., Engineer in charge of the double track survey. Stops [illegible] Pass and its approaches, the valley of the [illegible] Rockies.

Kootenay Central Ry.—[illegible] British Columbia recently stated that the building of the K.C. Ry. would be completed next year. The line has already been [illegible] chene Landing, and from Coalmont northerly to Fort Steele, B.C. Grading has been completed on a large portion of the inter[illegible] steel is on hand for tracklaying.

Branch Line at Merritt, B.C.—The Board of Railway Commissioners has authorized the company to build a branch line at Mer[illegible]

Coquitlam Terminals.—[illegible] of the 12 stall roundhouse at the new ter[illegible] desired. A [illegible] river, in connection with the development of the terminals.

British Columbia Southern Ry.—[illegible] be constructed.

Kootenay and Arrowhead Ry.—[illegible] the time within which the company may build its authorized line from Gerrard to Arrowhead, B.C.

Victoria, B.C.—The Premier of British Columbia recently stated that preliminary arrangements had been completed between the C.P.R. and the Canadian Northern Pacific Ry. for the erection of a union station in Victoria, at an estimated cost of [illegible]

Plans are stated to be in course of preparation for the erection of an office building on the corner of Belleville and Menzies streets, Victoria. (Nov., pg. 565.)

Railway Rolling Stock Notes.

The G.T.R. has ordered 10 first class cars and 10 baggage cars from its Montreal [illegible]

The Grand Trunk Pacific Ry. has received 9 consolidation locomotives from the Canadian Locomotive Co.

The Intercolonial Ry. has received 258 box cars, 60,000 lbs. capacity, from the Nova Scotia Car Works.

The Timiskaming and Northern Ontario Ry. has received four steel underframe vans, nos. 70 to 73, from the Canadian Car and Foundry Co.

The Intercolonial Ry. has ordered one flanger to be built in its Moncton shops; 160 box cars from the Nova Scotia Car Works; 100 Hart convertible dump cars and 50 Hart-Otis steel dump cars, from the Hart-Otis Car Co., these to be built by the Canadian Car and Foundry Co.

The C.P.R., between Nov. 14 and Dec. 13, ordered the following rolling stock:—510 stock cars, 303 refrigerator cars, 6 vans, 12 flat cars, 1 second class car and 2 pile drivers from its Angus shops, Montreal; 800 flat cars, 200 stone cars and 500 ballast cars from the Canadian Car and Foundry Co.

[illegible] Central Rd. has decided to have built at its St. Thomas shops, Ont., will be 36 ft. long, 80,000 lbs. capacity. The erection will be commenced as soon as it is possible to get the material, and will be completed at the rate of 15 a month. They are intended for use on the Canada Southern Ry., operated by the M.C.R.

The G.T.R. has received the following additions to rolling stock:—18 Pacific type locomotives, 69 ins. drivers, from the Baldwin Locomotive Works; 63 refrigerator cars from the Canadian Car and Foundry Co.; 155 box cars from the Pressed Steel Car [illegible] Steel Car and Foundry Co.; 1 first class car and 2 baggage cars from its Montreal [illegible]

[illegible] Nov. 15 and Dec. 15, received the following additions to rolling stock:—45 box cars and [illegible] Car and Foundry Co.; one locomotive from [illegible] Foundry Co.; 50 flat cars from [illegible]

The Canadian Northern Ry., between Nov. [illegible] Nova Scotia Car Works, 543 box cars [illegible] flat cars, from the National Steel Car Co.

The Grand Trunk Ry., has ordered the following rolling stock, deliveries of which [illegible] cars, nos. 4106 and 4107, from the G.T.R. [illegible] 1021 to 1030, 5 colonist cars, nos. 3038 to 3042, from the Canadian Car and Foundry Co.; 15 sleeping cars, 6 parlor cafe cars, nos. 3905 to 3910, 6 dining cars, nos. 4006 to 4011, 5 tourist cars, nos. 3410 to 3414, and 10 first class cars, nos. 2054 to 2063, from the Pullman Co.; 15 baggage cars, nos. 418 to 432, and 14 mail and express cars, nos. 110 to 123, from the Osgood Bradley Car Co.

The C.P.R., between Nov. 14 and Dec. 13, received the following additions to rolling stock:—99 flat cars, 10 first class cars, 1 [illegible] plows and 3 D.4 locomotives from its Angus shops, Montreal; 618 box cars from the Canadian Car and Foundry Co.; 16 N.3 locomotives and 6 D.10 locomotives from the Montreal Locomotive Works; 618 box cars from the Standard Steel Car Co.; 173 box cars from the Western Car and Foundry Co.; 244 box cars from the Barney and [illegible] American Car and Foundry Co.

The Canadian Car and Foundry Co., between Nov. 14 and Dec. 23, received the fol[illegible] underframe flat cars, 40 tons capacity, 200 steel underframe stone cars, 40 tons capacity, and 500 ballast cars, 50 tons capacity, from the C.P.R.; 650 box cars, 30 tons capacity, and 2 snow plows, from the Canadian Northern Ry.; 5 colonist sleeping cars, from the G.T. Pacific Ry., and 10 steel underframe flat cars, 40 tons capacity, from the Toronto, Hamilton and Buffalo Ry.; and delivered 25 steel snow plows and 613 steel frame box cars, 40 tons capacity, to the C.P.R.; 5 first class cars and 1 wooden box car, 30 tons capacity, to the Canadian Northern Ry.; 389 steel underframe box cars, 30 tons capacity, and 69 refrigerator cars, 30 tons capacity, to the G.T.R.; 29 Hart convertible coal cars, 50 tons capacity, [illegible] bodies, to the Montreal Tramways Co., and [illegible] the Dominion Coal Co.

Toronto Terminals Railway Company.

This is the title of the company which is to build the new union station on the Toronto waterfront. The company was incorporated in 1906, the G.T.R. and the [illegible] the stock each. Application is now being made to the Dominion Parliament to increase the capital stock from $3,000,000 to [illegible] H. G. Kelley and W. Wainwright as provisional directors in place of C. M. Hays, E. H. Fitzhugh and F. H. McGuigan.

The interpretation of this application is that the two companies have completed the arrangements by which they shall be equal partners in the new station. Under the agreement governing the present station, [illegible] is said, however, that this agreement does not settle the viaduct question, upon which an appeal has been made to have the Board of Railway Commissioners' order for the [illegible] the C.P.R. plan for bridges over the tracks [illegible] plan the Toronto city council is strongly opposed.

Canadian Railway
and
Marine World

[illegible]

[illegible]

[illegible] Canada

[illegible]

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ADVERTISING COPY must reach the publishers by the 10th of the month preceding the date [illegible]

TORONTO, CANADA, JANUARY, 1913.

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Steam Railway Track Laid in 1912.

[illegible]

	Miles	Miles
Algoma Central and Hudson Bay Ry.—		
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
British Columbia Electric Ry.—		
[illegible]	[illegible]	[illegible]
British Yukon Ry.—		
[illegible]	[illegible]	[illegible]
Canadian Northern Ontario Ry.—		
[illegible]	[illegible]	[illegible]
Canadian Northern Ry.—		
*Manitoba, Saskatchewan and Alberta		303.63
Canadian Pacific Ry.—		
[illegible]	[illegible]	
Tilston Westerly in Manitoba ..	3.20	
[illegible]	[illegible]	
*Estevan north west	20.00	
[illegible]	[illegible]	
Caithness south	11.00	
Laggan-Lake Louise	4.00	
[illegible]	[illegible]	
	79.47	353.[illegible]
Dominion Atlantic Ry.—		
Main Line to Canning wharf, N.S.	[illegible]	
Centreville to Belltown, N.B...	0.31	
[illegible]	[illegible]	[illegible]
Hayward Jct. to Cowichan Lake, B.C.	[illegible]	
Osborne Bay Jct. to Osborne Bay, B.C.	[illegible]	[illegible]
Fredericton and Grand Lake Coal and Ry. Co.—		
[illegible]	[illegible]	[illegible]
Grand Trunk Pacific Ry.—		
Main Line between Yellowhead Pass and Prince Rupert, B.C.	128.00	
Regina towards Int. Boundary	136.00	
Regina to Moose Jaw, Sask...	40.00	
[illegible]	[illegible]	
Tofield towards Calgary, Alta. ..	92.00	
[illegible]	[illegible]	[illegible]
Intercolonial Ry.—		
Diversion of line between Nelson and Chatham, N.B.	8.30	
Diversion of line between Georges River and Sydney Mines, N.S.	[illegible]	[illegible]
Kettle Valley Ry.—		
[illegible]	[illegible]	[illegible]
Timiskaming and Northern Ontario Ry.—		
[illegible]	[illegible]	[illegible]
Kilgard to Sumas Landing ...	3.00	[illegible]

[illegible]

[illegible]

[illegible] points.

[illegible] discharging water directly from the tender [illegible] 2½ in. unlined linen hose, and a 15 in. discharge nozzle with a ⅝ in. opening, all kept in a box under the running board. [illegible]

The yards are divided into districts, with a certain assignment to each, the locomotives responding, on the fire signal for that district sounding on an air whistle in the signal tower, the traffic in the yard being ordered to give way to the locomotives [illegible] fire brigades come under the charge of the assistant yardmaster, acting as chief, and [illegible] particular duty assigned to him.

Railway Lands Patented.—[illegible] were issued during October, relative to Dominion lands in Manitoba, Saskatchewan, Alberta and British Columbia, as follows:—

	Acres
[illegible]	[illegible]
[illegible]	[illegible]
Totals	[illegible]

J. H. Dodd has been appointed manager, Great North Western Telegraph Co. at Collingwood, Ont., vice F. Pope, resigned.

[illegible] has opened offices at Milnikek and St. Ulric, [illegible] field, Beaumaris, Dwight, Port Cockburn and Westmeath, Ont.

In connection with the winding up of the Charing Cross Bank, London, Eng., which was financing the Atlantic Quebec and Western Ry. and industrial enterprises in the Gaspe peninsula of Quebec, the trustees recently sold the Gaspe Lumber and Trading Co.'s properties to the St. Maurice Lumber [illegible]

[illegible] Co's. tariffs of tolls, for [illegible] each additional word. A press rate of 6c. [illegible]

Proposals for Shorter Routes From Great Britain to Canada

[illegible] Galway, on the west coast of Ireland, the [illegible] in Dublin during October, and a committee [illegible] an interview with the Premier at Ottawa, Nov. 5, in which the project was outlined. While the old project proposed to build a tunnel from Scotland to Ireland, the pre[illegible]

But it is also claimed that faster time [illegible] charter to H. C. Thomas, of London, Eng., and his associates for the building of a railway from Green Bay to Bay of Islands, [illegible]

[illegible]

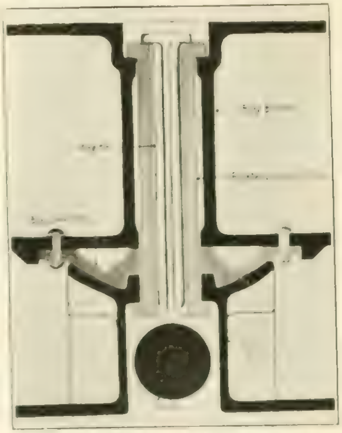
[illegible]

Anti-Telescoping Device on Grand Trunk Railway.

A [illegible] reduce the danger of passenger cars tele[illegible] and installed on several G.T.R. cars by J. [illegible]

[illegible] that telescoping would be nearly impossible [illegible] in some way prevented from leaving the car bodies, as it is due to the latter leaving the braking influence of the trucks that they slide forward through each other. To make the body and trucks a virtual unit was the aim. That this is generally recognized is evidenced in the circular issued by the Board of Railway Commissioners, pub[illegible] World for December, in which the railway companies were asked to consider the matter so that it might be discussed before an early sitting of the Board.

Hitherto, the only force available to prevent the body from moving off the trucks is the brakes which are applied to the trucks; there never was any means pro[illegible]



[illegible] pin, which is not sufficient. The distance [illegible] made more essential the need of some[illegible] trucks and telescoping. The heavy shock [illegible] impact; with the high ten[illegible] By [illegible] there are no means of applying any artificial power on the body of the car to stop [illegible] this purpose is to tie the body to the trucks.

The simple device shown herewith con[illegible] ing the additional weight of the trucks to the car body in the event of the latter lift[illegible] ends of the car platform having the effect of lifting the body from the trucks. This device will not interefere in any way with the present free and flexible movement of [illegible] any ordinary passenger car with but little increase in weight. It is being applied on a large order of new passenger cars for the Grand Trunk Pacific and Grand Trunk Railways, and will be standard on all passenger equipment for both lines.

Railway Building in Alberta in 1912.

[illegible] Government respecting the building of rail[illegible] miles were built in the 10 months ended [illegible] dian Northern Ry. has 448 miles of grading ready for tracklaying; the Grand Trunk [illegible] Dunvegan and British Columbia Ry. 70 miles, on which eight miles of track have been laid.

At the end of 1905 there were 1,060 miles of railways in the province, of which 946 [illegible] Alberta Ry. and Irrigation Co. These two companies are now one. In 1906 the Canadian Northern Ry. built 178 miles of line in the province, and in 1908 the G.T. Pacific [illegible] the end of that year being 1,306. At the end of 1911, the railway mileage in the province was 2,100, and with the present increase there were 2 798 miles of completed railways in the province. Of this mileage [illegible] Canadian Northern Ry., and 619 by the G.T. Pacific Ry. In preparing this statement the provincial government appears to have omitted the C.P.R. and Alberta Central Ry. from its calculations. This line [illegible] line, but has recently passed under C.P.R. control.

Protection of Railway Employes.—[illegible] following provision of order 12225, Nov. 9, [illegible] stands shall, by Nov. 10, 1912, be either removed or changed so that the same shall [illegible]

[illegible] voir in which sediment in the water supply [illegible]

National Transcontinental Railway Construction.

The Minister of Railways stated in the House of Commons Dec. 4 that the total expenditure by the Government on construction to that date was $125,053,267.53, of which $15,545,118.29 had been paid to the G.T. Pacific Ry. in respect of the construction contracts which that company held.

We are officially advised that during the construction season of 1912, there were laid 361.15 miles of track distributed as follows: Mileage 109 to 153 east of Quebec Bridge, 34 miles; mileage 1 to 75 west of Quebec Bridge, 7.50 miles; mileage 288 and 419 west of Quebec Bridge at different points a total of 84.75 miles; mileage 168 west of Cochrane and mileage 102 east of Lake Superior Jct., Ont., at different points a total of 235.90 miles.

A train service was put in operation on the section of the line from Moncton to the New Brunswick-Quebec boundary, Nov. 20, the timetable providing for west-bound service to Edmundston, N.B., on Mondays, Wednesdays, and Fridays, and an east-bound service to Moncton, Tuesdays, Thursdays and Saturdays. The passenger cars used have been hired from the Intercolonial Ry., and the locomotives and freight cars from the contractors, and the Intercolonial Ry. The operation of the line is under the charge of W. B. Cronk, General Superintendent, for the Commissioners at Ottawa, with E. P. Cronk as Superintendent at Edmundston.

The Minister of Railways stated in the House of Commons, Dec. 4, it was expected that the section of the line from the New Brunswick-Quebec boundary to Quebec city would be completed and ready for operation in Sept., 1913. It is reported that there are only about 12 miles of track remaining to be laid on this section of the line, and that the principal work to be done is the bridging, ballasting and levelling.

The whole question of the site of the terminals at Quebec, the Minister of Railways stated in the House of Commons, Dec. 4, is still under the consideration of the Commission. The matters being considered include the question of the construction of a tunnel under Cape Diamond, with the object of locating the terminals elsewhere than on the Champlain market site.

West of Quebec to 150 miles east of Cochrane, Ont., there remains only about 50 miles of steel to be laid. Track now extends from the last point named to a considerable distance west of Cochrane, and the Minister of Railways stated in the House of Commons, Dec. 2, that he expected to receive a report by Dec. 31, that all the steel had been laid to Graham or Lake Superior Jct. At the last report there were only 48 miles unrailed. R. W. Leonard, the Commisisoner, is quoted as recently stating that the Cochrane-Lake Superior Jct. section of the line would not be in a condition for the operation of trains until September. The section of the line from Lake Superior Jct. to Transcona, four miles east of Winnipeg, is completed, and a train service is being given by the G.T. Pacific Ry. under an agreement. Negotiations for a lease of this section are in progress. The Commission will give the G.T.P. Ry. the opportunity of leasing the various sections of the line as they are taken over from the contractors, but the company is not compelled," added Mr. Leonard, "to declare its policy until the entire line between Moncton and Winnipeg is completed." (Nov., 1912, pp. 562.)

Tenders will be received by the Commissioners, to Feb. 13, for the furnishing and delivery of machines, tools, appliances, motors, furnaces, cranes, etc., required for the equipment of the car department of the shops at Transcona, Man. Specifications and other information may be obtained from W. J. Press, Mechanical Engineer, Ottawa.

Grand Trunk Pacific Railway Construction.

The Dominion Parliament is being asked to authorize the company to make a further issue of perpetual or terminable debenture stock to an amount not exceeding $25,000,000, the same to rank with the debenture stock authorized to be issued by chap. 100 of the statutes of 1906. The proceeds of this issue are to be applied to the completion of the railway and for providing equipment.

The Minister of Finance is seeking power from the Dominion Parliament for the purpose of devoting part of the Dominion surplus for the financial year to the purchase of G.T.P. Ry. bonds, in order to offset any further calls on the Treasury by reason of the operation of the "implementing" clause in the guarantee given by the Government. About £6,500,000 of these bonds are as yet unissued.

Application is being made to the Dominion Parliament to confirm an agreement dated April 10, 1911, made with the Canadian Northern Ry., providing among other things for the joint use of a piece of line near Winnipeg, defining the rights of each company under the agreement, and declaring that the acquiring of these rights is a compliance with the schedule to chap. 71 of the statutes of 1903. It is also desired to secure confirmation of another agreement with the Canadian Northern Ry. made April 24, 1912, providing among other things for the joint use of a piece of line near Edmonton, Alta.

We are officially advised that during 1912 the following track was laid on the main line and branches:—Main line between Yellowhead and Prince Rupert, part westerly and part easterly, 128 miles; branch lines—Regina towards International boundary, 136 miles; Regina to Moose Jaw, 40 miles; Talmage towards Weyburn, 0.25 mile; Biggar towards Calgary, 104 miles; Oban to Battleford, 48.50 miles; Tofield towards Calgary, 92 miles; Bickerdike to Brazeau, 56 miles; a total of 609.75 miles.

The Minister of Railways stated in the House of Commons, Dec. 4, that the assistance granted by the Government to the company in respect of the building of the line from Winnipeg, Man., to Prince Rupert, B.C., was as follows:—Implementing guarantee, $4,994,416.66; loan under chap. 19, statutes of 1909, $10,000,000; guarantee of 5% bonds, $35,040,000; bonds pledged, $12,745,800.

The Board of Railway Commissioners has authorized the opening for traffic of the line from Fitzhugh, Alta., to Tete Jaune Cache, B.C., mileage 1027.8 to 1095.3.

J. W. Stewart, of the contracting firm of Foley, Welch and Stewart, on the occasion of his recent return to Vancouver from an inspection of construction in progress from Tete Jaune Cache, to the end of steel near Hazleton, easterly from Prince Rupert, is quoted as stating that good progress is being made. While there has been a considerable decrease in the number of foreign laborers employed on account of the war in eastern Europe, their places have been taken by men from the prairies. The only stretch of the right of way on which construction is not being gone on with is between Fort George and Fraser lake. Subcontracts on this stretch of 140 miles were reported to have been let, Dec. 4, as follows: Carleton Griffin; Burrs and Jordan; John Bostock; Stewart Bros.; D. Ross; M. Sheady; M. McHugh; N. McLeod; H. McLeod; Freiburg and Stone.

Contracts have been placed for the cutting and delivery along the line west of Tete Jaune Cache, B.C., during the current year of 500,000 ties.

The Board of Railway Commissioners has authorized the operation of trains over portions of the line between mileage 164 and 176.8 easterly from Prince Rupert.

GRAND TRUNK PACIFIC BRANCH LINES.

Extensive improvements and additions are being made to the terminal facilities at Fort William, Ont., where the company's Lake Superior branch reaches the Great Lakes from the National Transcontinental Ry. at Lake Superior Jct. The north shore of the Mission basin at the mouth of the McKellar river is being cribbed with concrete for about a mile. On the shore, the new 1,000 ft. freight shed is about completed; and the finishing touches are being given to the second unit of the company's grain elevator. This addition will hold 2,500,000 bush., bringing the capacity of the elevator up to 6,000,000 bush.

Regina, Sask., is the centre from which a good deal of construction is being carried on. It is reached from the main line by a branch from Melville, and arrangements have been completed for the laying out of extensive terminals.

The Saskatchewan Legislature is considering the confirmation of a bylaw sanctioning an agreement made between the city of Regina and the G.T. Pacific Branch Lines Co., under which the company will be granted certain lands for right of way and terminal purposes in consideration of establishing divisional terminals there; and the confirmation of a second bylaw granting certain lands upon which the company agrees to erect an hotel at a cost of $750,000, and $250,000 for furnishing and equipment. The clearing of the hotel site has been completed, and the foundation work is in progress. The company's General Passenger Agent recently announced that this hotel would be named The Qu'Appelle.

The line out of Regina upon which the greatest progress has been made is that running to the International boundary east of North Portal. It was expected it would be completed by the end of 1912. In connection with the building of this line M. Donaldson, Vice President and General Manager, is quoted as stating that if the necessary information is submitted to the company it is prepared to give a favorable consideration to a proposal to give connection with Estevan. On the other branch out of Regina, which runs to Moose Jaw, a limited train service has been put on for 34.7 miles. The ballasting will be done in the spring. Track was laid Nov. 24 into Moose Jaw, where construction work ends for the season. An agreement has been reached with the Moose Jaw city council as to the route through the city and in a northwesterly direction. The location plans for this branch have been approved for a considerable mileage, the most recent mileage being to 45 miles from Central Butte, across the South Saskatchewan river, and from mileage 67.86 to 79.02 from Moose Jaw.

The Board of Railway Commissioners has authorized the opening for traffic of the Biggar-Calgary branch from Biggar to no. 1 siding, 7.1 miles.

The Board of Railway Commissioners has authorized the opening for traffic of the Oban-Battleford, Sask., branch, mileage 0 to 48.5. This takes the line into Battleford. Press reports state that engineers are laying out a 40 mile line to connect Battleford with its Cutknife branch.

The Board of Railway Commissioners has authorized the opening for traffic of the

[illegible]

Dominion Government Railway to Hudson Bay

[illegible] all, for the [illegible]

London and Port Stanley Railway.

[illegible] to this [illegible]

The principal [illegible] however, has centred round the leasing of [illegible] River Rd., the Canadian line of the Pere Marquette Ry. [illegible] working out plans for the development of [illegible] propositions, and these are under consideration.

Great Northern Railway Lines in Canada

[illegible] references to the work on the [illegible] with the G.T. Pacific Ry. branch from [illegible]

Midland Ry. of Manitoba.—[illegible] 1912, the [illegible] by 600 ft., [illegible] turntable and other buildings at [illegible] rights on the [illegible]

Vancouver, Victoria and Eastern Ry. and [illegible] in [illegible]

[illegible] is in progress [illegible]

Vancouver Terminals, Etc.—The G.N.R. President's annual report states that the [illegible] into the city, seven miles. There is under construction at Burrard inlet, Vancouver, [illegible] on which will be built two frame ware [illegible] quired for slopes and bridges over the Sumas river, in connection with the grade [illegible] Board. (Nov., pg. 559.)

Grand Trunk Railway Betterments, Construction, Etc.

Richelieu River Bridge.—The new bridge over the Richelieu river, described on pg. 20 of our issue of Jan., 1912, which has been built at a cost of $200,000, has been completed and opened for traffic. The bridge connects Coteau, Que., with St. Albans, Vt.

Prescott Terminals.—Application is being made to the Ontario Legislature by the town council of Prescott, Ont., for the confirmation of a bylaw to carry out an agreement with the G.T.R. relative to the construction of divisional terminals there, and to raise $35,000 for the building of a [illegible]

Union Station for Kingston, Ont.—A plan [illegible] bring the G.T.R. further into the city, and to provide for the erection of a union station. The city council and the board of trade are considering the plans, with a view of pressing it upon the company's consideration.

Hamilton Improvements.—G.T.R. officials [illegible] that the plans for the enlargement of the Stuart street terminals, and other work on the company's property in the city, have been prepared and will be submitted to the city council at an early date.

Port Colborne Improvements.—[illegible] the company and the municipality with reference to the provision of improved terminal facilities at Port Colborne. (Nov., [illegible])

In connection with a Children's Welfare [illegible] exhibit, covering 800 square yards, showing the handling of western grain from a model [illegible] lakes, all in miniature, is provided. The [illegible]

[illegible]

Transportation Appointments Throughout Canada.

[illegible]

Canadian Pacific Ry.—[illegible] Montreal. [illegible]

T. COLLINS, [illegible] Superintendent, district 1, Ontario division, vice C. W. [illegible] Office, Toronto.

[illegible] pointed Superintendent, district 2, Lake Superior division, vice T. Collins, transferred. Office, Chapleau, Ont.

M. CHRISTENSON [illegible] Cossar, transferred.

GRANT HALL, heretofore Assistant [illegible] appointed General Manager, Western Lines. Office, Winnipeg. The position of Assistant [illegible]

The territory of the Western Lines passenger department, Revelstoke and Midway, B.C., and east, has been rearranged [illegible]

Manitoba district, J. A. McDONALD, District Passenger Agent, Brandon, Man.; D. M. SINCLAIR, Travelling Passenger Agent, Brandon, Man. Territory, Manitoba division west of Winnipeg.

Saskatchewan district, J. E. PROCTOR, District Passenger Agent, Regina, Sask.; J. C. PIKE, Travelling Passenger Agent, Regina, Sask. Territory, Saskatchewan division.

Alberta district, R. G. McNEILLIE, District Passenger Agent, Calgary, Alta.; J. V. MURPHY, Travelling Passenger Agent, Calgary, Alta.; A. J. SHULMAN, Travelling Passenger Agent, Edmonton Alta. Territory, Alberta division, also, Field to Revelstoke and Arrowhead, B.C., division.

Kootenay district, E. MALONE, District Passenger Agent, Nelson, B.C. Territory, Kootenay Landing to Rossland, Midway, Arrowhead and intermediate points (not in[illegible]

Winnipeg Territory, Ticket Agents report direct to General Passenger Agent. Territory, Emerson, Arburg, Gimli and Lac du Bonnet branches and main line Winnipeg to Port Arthur, inclusive.

D. M. SINCLAIR has been appointed Travelling Passenger Agent, Brandon, Man., vice P. J. Cullin.

J. A. McDONALD, heretofore District Passenger Agent, Nelson, B.C., has been appointed District Passenger Agent, Brandon, Man., vice J. E. Proctor, transferred.

J. LANSBERRY, heretofore store foreman, Moose Jaw, Sask., has been appointed Storekeeper, Weyburn, Sask.

J. C. PIKE has been appointed Travelling Passenger Agent, Regina, Sask.

J. E. PROCTOR, heretofore District Passenger Agent, Brandon, Man., has been appointed District Passenger Agent, Regina, Sask.

D. B. COSSAR, heretofore Shop Foreman at Kenora, Ont., has been appointed Shop [illegible]

A. J. SHULMAN [illegible] Travelling Passenger Agent, [illegible] Alta.

[illegible]

J. M. McKAY, heretofore Trainmaster, Revelstoke, B.C., has been appointed Superintendent, district 1, British Columbia division, [illegible] Revelstoke.

JOHN [illegible] has been appointed Trainmaster, district 1, British Columbia division, vice J. M. McKay, promoted. Office, Revelstoke.

M. E. MALONE, heretofore Travelling Passenger Agent, Spokane, Wash., has been appointed District Passenger Agent, Nelson, B.C., vice J. A. McDonald.

A. R. HOWARD, recently appointed Trainmaster at Agassiz, B.C., has resumed his former position as General Yardmaster at Vancouver, and the position of trainmaster [illegible]

Fort Garry Union Station, Winnipeg.—[illegible]

Grant Hall

[illegible]

Winnipeg Joint Terminals, Canadian Northern Ry., Grand Trunk Pacific Ry., and National Transcontinental Ry., has resigned.

Grand Trunk Pacific Ry.—[illegible] territory from Watrous to Wainwright, Alta., including branches, reporting to J. R. Mooney, Road Foreman, Wainwright, vice C. D. Smith, assigned to other duties.

The following agents have been appointed:—Westfort, Ont., J. P. Tonnolli; Edgerton, Alta., R. J. Hewett.

Grand Trunk Ry.—A. S. GOING, heretofore Locating Engineer, has been appointed Engineer of Construction. Office, Montreal.

C. E. JENNEY, heretofore Travelling Passenger Agent, Toronto, has been appointed Travelling Passenger Agent, Pittsburgh, Pa., vice W. Robinson, deceased. He will report to the General Passenger Agent, Montreal. Office, 507 Park building.

W. J. MOFFATT, heretofore chief clerk to City Ticket Agent, Toronto, has been appointed Travelling Passenger Agent, vice [illegible]

[illegible] Ont., G. McMann, acting; Glencairn and Avening, Ont., E. McDonald; Hamilton, King st., Pass., Ont., J. Dixon; Appin, Ont., G. Lamont; Caledonia, Ont., F. Angush; Simcoe, Ont., I. Miller; Stoney Point, Ont., C. W. Ouellette; Carlsbad Springs, Ont., J. T. Boss; South Indian, Ont., F. A. Caillier; outside agencies, Dunnville, Ont., F. Blackwell; Harriston, Ont., R. J. Barton; Renfrew, Ont., C. Dewey; Wingham, Ont., H. B. Elliott.

Great Northern Ry.—R. I. FARRINGTON, Vice President, St. Paul, Minn., has resigned, effective Jan. 1. We are officially advised that the vacancy will not be filled.

Intercolonial Ry. — As previously announced, the position of Chief Engineer has been abolished and W. B. MACKENZIE, M. Can. Soc. C.E., who held that position, has been appointed Right of Way and Lease Agent.

The Engineer of Maintenance, T. C. BURPEE, M. Can. Soc. C.E., has been given charge, under the General Superintendent's direction, of all engineering and maintenance of ways matters.

The superintendents have been placed in charge of operation and maintenance. The resident engineers will report to the super[illegible] Engineer of Maintenance on engineering matters. The roadmasters will report to the superintendents. The following are the districts and officials as rearranged:—

District 1. Montreal to Ste. Flavie, Que., District Superintendent, D. McDonald; Resident Engineer, R. H. Emmerson, offices, Levis, Que.; Assistant Superintendent, E. L. Desjardins, office, Riviere de Loup, Que.

District 2, Ste. Flavie, Que., to Moncton, N.B., District Superintendent, E. Price; Resident Engineer, F. O. Condon, offices, Campbellton, N.B.; Assistant Superintendent, L. S. Brown, office, Newcastle, N.B.

District 3, St. John, N.B., to Halifax, N.S., District Superintendent, J. T. Hallisey; Resident Engineer, H. Jardine, offices, Truro, N.S.; Assistant Superintendent, H. B. Fleming, office, Moncton, N.B.

District 4, Truro to Sydney, N.S., and the short line, District Superintendent, Y. C. Campbell; Resident Engineer, C. W. Archibald, offices, New Glasgow, N.S.; As-

C. W. PRICE, heretofore trick dispatcher, has been appointed Chief Dispatcher, vice H. B. Fleming, appointed Assistant Superintendent, Halifax and St. John district, as announced in our last issue. Office, Moncton, N.B.

Kingston and Pembroke Ry.—This line having been leased to the C.P.R., it will, from Jan. 1, be operated as part of district 1, Ontario division, C.P.R., of which T. Collins, Toronto, is Superintendent.

Michigan Central Rd. — H. SHEARER, heretofore Division Superintendent, Canada division, St. Thomas, Ont., has been appointed Assistant to the General Manager, Detroit, Mich.

F. W. COWLEY, heretofore Trainmaster, has been appointed acting Division Superintendent, Canada division, vice H. Shearer, promoted. Office, St. Thomas, Ont.

J. S. GRANEY, heretofore dispatcher, has been appointed acting Trainmaster, Canada division, vice F. W. Cowley, promoted. Office, St. Thomas, Ont.

[illegible]

[illegible]

Factors in the Selection of Locomotives.

[illegible] Where [illegible]

Great Northern Railway Finances, Etc.

[illegible] stock of other com[illegible] Northern Ry. In addition to these amounts [illegible] panies has been increased by advances of [illegible] Ry., and of $334,261.15 to the Midland Ry. of Manitoba. There was also advanced to the Kootenai Valley Ry. during the year $11,564.39 for additions and betterments. [illegible] ceived, free of bonus, the entire capital stock of the Kaslo and Slocan Ry., International Navigation and Trading Co., [illegible] Nelson Ry. The stock of the Kaslo and

[illegible] Valley [illegible] Cedar Jct., B.C.). The [illegible]

Canadian Northern Railway, Construction, Betterments, Etc.

James Bay and Eastern Ry.—The Board of Railway Commissioners has approved revised plans for the line mileage 20.43 to 21.40 from Roberval, Que. This line is under construction, J. P. Mullarkey being the contractor. Considerable grading has been done, but no track has been laid.

Canadian Northern Quebec Ry.—Application is being made to the Dominion Parliament to extend the time for the building of the projected line from Rawdon northerly to a junction with the National Transcontinental Ry., having a branch to Joliette, and the projected line from St. Jerome to St. Eustache, and to authorize the building of the following additional lines:—From Montreal, crossing the St. Lawrence river opposite the city, and from thence to Levis; and from some point on such line east of the St. Lawrence river to St. Rose Jct., thence to near Sherbrooke or Lennoxville

Application is being made to the Quebec Legislature to confirm an agreement between the city of Quebec and the company regarding the new shops at Limoilon which are practically completed.

Route plans have been approved by the Minister of Railways for 12 miles westerly from Huberdeau, Que., the present terminus of the old Montford and Gatineau Colonization Ry.; and from Rawdon, the present terminal of L'Epiphanie branch, to St. Donat, Que., 42 miles.

Canadian Northern Montreal Tunnel and Terminal Co.—The Board of Railway Commissioners has approved of location plans in Montreal from station 134+79.7, Lagauchetiere street, to station 447+17.9.

Sir Donald Mann visited the tunnel works Dec. 19, and is reported to have expressed himself thoroughly pleased with the progress being made. The total length of the tunnel under Mount Royal, from the northern portal to Dorchester street, Montreal, will be 3.5 miles. The heading from the northern end has already been driven 1,000 ft., and the heading from Dorchester street 500 ft. A shaft 238 ft. deep has been sunk immediately at the back of the mountain, and headings are being driven therefrom in both directions. Two additional shafts are to be dug, so that four additional headings may be driven. It is expected to have the tunnel driven by the end of 1913, and ready for the operation of trains by the end of 1914. From the southern portal to the St. Lawrence river the track will be an elevated one, the exact location and plan of the structure is under consideration by the Board of Railway Commissioners. From the waterfront to a point six miles north of the northern portal of the tunnel the line will be operated by electricity.

Montreal-Ottawa-Port Arthur Line.—The total length of this line under construction is 912 miles and is all under contract. J. P. Mullarkey has the contract for the section from Montreal to Hawkesbury, Ont., 60 miles. No track was laid on this line during the past year. From Hawkesbury to Ottawa the line is being operated, the distance between the two points being 59 miles. The next section under contract extends from Ottawa to Capreol, Ont., 309 miles, J. P. Mullarkey working on the mileage between Ottawa and Pembroke, and Angus Sinclair from Pembroke to Capreol. On this section 35 miles of track were laid during 1912. The line is completed and in operation from Capreol to Ruel, about 38 miles. The contract for the 543 miles from Ruel to Port Arthur is being carried out by Foley Bros. and the Northern Construction Co. On this section 115 miles of track was laid during 1912.

The principal work on the Montreal-Hawkesbury section is being done on the mainland north of Montreal island. The bridge over the river at St. Andrews is about completed and that over the Back river will be completed in the spring. is expected to have the line completed early this year, so as to enable a through service to be operated between Montreal and Ottawa, and Montreal and Toronto, during the summer.

The Board of Railway Commissioners has been approved. The company had given the age 55.23 to 59.42 in Hochelaga tp., through North Bay, Ont., mileage 343.55 to 346.42 from Montreal; mileage 280.5 to 290.6, in Algoma district; and through unsurveyed territory, mileage 398 to 413 from Sudbury Jct., Ont.

Canadian Northern Ontario Ry.—The Dominion Parliament is being asked to extend the time within which the lines authorized to be built by items 1, 2, 3, 4, 6, 9 and 10 of sec. 2, chap. 57, of the statutes of 1911; the line mentioned in par. c of the same sec. and chap.; the lines mentioned in sec. 2, chap. 93 of the statutes of 1908, may be built, and to authorize the building of the following additional lines:—An extension of the line referred to above as the line in par c., south-westerly from Berlin to Stratford and St. Marys, with a branch to Woodstock; a line from Sarnia to Chatham, and a line from Orillia to Goderich via Owen Sound, or with a branch to Owen Sound.

During 1912 track was laid on 45 miles of the line between Ottawa and Toronto. The uncompleted section is between Sydenham and Ottawa, 80 miles. J. P. Mullarkey has the contract for the entire distance, with the exception of certain work on a 20-mile section which was let to Ewen Mackenzie. The work on the section is well advanced.

Plans which have been approved by the Board of Railway Commissioners were recently filed at the Toronto City Hall for the line from Leaside Jct. to the union station at North Toronto, which is to be built by the C.P.R. for joint use with the C.N.R. The plan shows a line parallel with the C.P.R. from Leaside Jct., as far as Cottingham street, at which point the two lines will join.

We are officially advised that the company has under survey line from Toronto to Thorold, Ont., 83 miles, and from Hamilton to Brantford, Ont., 26 miles. In connection with the first of these lines plans have been filed for the projected subways on the north of Toronto, as far west as Geary street. The complete right of way is reported to have been purchased into Hamilton; certain plans for work in Hamilton have been filed with the city council. It is reported that the necessary arrangements are being completed for starting building in the spring. The Board of Railway Commissioners has approved revised location plans through Nelson tp., mileage 31.54 to 37.50 from Toronto.

Canadian Northern Ry.—Application is being made to the Dominion Parliament to extend the time for the construction of the lines mentioned in paragraphs a, b, c and h of sec. 2, chap. 92 of the statutes of Canada for 1908; the line of the Saskatchewan Midland Ry. from Humboldt to Melfort; and for power to build a line from near Swift Current westerly to a junction with the authorized Macleod-Lethbridge line; to confirm an agreement with the C.P.R. respecting the terminals in Regina, Sask., and to increase the company's bonding powers.

It is reported that plans have been prepared for the building of a new station at Fort William, Ont.

The bridge over the Assiniboine river at Winnipeg collapsed Dec. 3, and a new 200-ft. span was put in place and the bridge reopened for traffic Dec. 7. The original bridge was a temporary structure, and the new one is also intended to be temporary.

The Board of Railway Commissioners has approved location of line through tps. 7-11, ranges 2-6, west principal meridian in Manitoba, mileage 18.08 to 53.76.

In connection with the proposed line from from Bienfait to a junction with the Regina-Brandon line, the Minister of Public Works informed the Saskatchewan Legislature, Dec. 2, that surveys had been made, and the route laid out, but it had not yet of route plans of a line from Craven, to tp. government to understand that construction would be started early this year, and the branch completed by the end of the year.

The Minister of Railways has approved of route map for the extension of the line now terminating at Bienfait, to Estevan, Sask., nine miles, and the Board of Railway Commissioners has approved of location plans for the line through Estevan, mileage 8.02 to 8.98.

The Minister of Railways has approved of route plans of a line from Croven, to tp. 25, r. 19 west second meridan, for 39 miles, and the Board of Railway Commissioners has approved of location plan for the same line for 8.79 miles out of Craven.

The Board of Railway Commissioners has approved of location of branch line through tp. 26, range 7, west 3rd meridian, Sask., mileage 54.05 to 61.32.

The Minister of Railways has approved of revised route map of the Thunder Hill branch extension for 53 miles, and the Board of Railway Commissioners has approved of location plan for the 42.52 miles of the same being from tps. 35-38, range 8.14, west 2nd meridian, mileage 93.83 to 135.52.

The Minister of Railways has approved revision of route map for the Humboldt-Calgary branch for 30.9 miles.

The Minister of Public Works informed the Saskatchewan Legislature, Dec. 5, that surveys for the Lampman-Kipling branch had been completed, and that application had been made to the Government for the approval of the route. Surveys were being made for a line from Kaiser to Swift Current, but no application had yet been made for the approval of the route. The government, however, understood that it was the company's intention to build both lines during 1913.

Recent press reports state that 17 miles of grading have been completed on the line from Oliver through Pakan to St. Paul de Metis, Alta.

Press reports state that track laying is in progress on the main line west of the Pembina river, and that it was expected to have steel laid to the crossing of the Macleod river, a distance of 62 miles, by Dec. 31. The erection of the bridge across the Macleod river will be gone on with during the winter.

The Board of Railway Commissioners has approved of revised location of the C.N.R through tps. 30-31, ranges 17.20, west 4th meridian, Alta., mileage 280.62 to 303.03.

The Dominion Parliament is being asked to extend the time for the construction of the various lines authorized to be built by the Canadian Northern Alberta Ry., under sec. 8, chap. 56, of the statutes of 1911.

Canadian Northern Pacific Ry.—The first section of the line to be put in operation extends from Port Mann to Hope, B.C. Track laying is in progress from Hope, easterly, and some track laying is also reported to have been made from Kamloops [illegible]. A [illegible] of grading has been done on the remaining section of the [illegible] toward the Yellowhead pass. Work has been started at Kamloops on the branch line into the Okanagan valley. [illegible] and [illegible] track laying will be started early in the year.

Temporary divisional headquarters have been opened at New Westminster, the local construction work being in charge of W. F. [illegible] $2,500,000 [illegible] on the laying out of terminal facilities at Port Mann.

A. D. Davidson, C.N.R. Land Commissioner, is reported as stating that arrangements have been completed for the immediate construction of car building shops at Port Mann. Subsequent press reports state that arrangements have been made with an eastern Canadian car building company to [illegible] shop at Port Mann having a capacity of ten cars a day.

Tenders were asked, Dec. 10, for the building of a branch line "on the eastern boundary of section 11, block 4 north, to a point adjacent to the Y of the B.C. Electric Ry. on the west boundary of section 12. [illegible] distance of 10.2 miles. The line is to be completed within six months.

Vancouver Island Construction.—The Premier of British Columbia recently stated in a speech that an arrangement had been practically concluded between the C.N.R. and the C.P.R. for the building of a union station in Victoria at an approximate cost of $1,500,000.

The construction on the sections of the line under contract from Victoria to the Alberni canal is reported to be making good progress. A considerable amount of location has been done beyond this point, and surveys are in progress on other parts of the line. The provincial Minister of Railways has approved of route plan of the line from Quinsan river to Mucharlot arm, on Nootka sound, mileage 210 to 270; a branch from mileage 215.5 to Duncan Bay, six miles; and a branch from mileage 238.5 to Bottles Lake, 5.5 miles. (Nov. pp. 564.)

Birthdays of Transportation Men in January.

Many happy returns of the day to:—

W. U. Appleton, Assistant to Superintendent of Motive Power, Intercolonial Ry., Moncton, N.B., born there, Jan. 29, 1878.

R. Armstrong, Superintendent, district 3, Saskatchewan division, C.P.R., Saskatoon, born at Kingston, Ont., Jan. 27, 1865.

A. H. Bears, Master of Bridges and Buildings, C.P.R., Saskatoon, Sask., born at Charlottetown, P.E.I., Jan. 6, 1857.

F. X. Belanger, General Freight and Passenger Agent, Temiscouata Ry., Riviere du Loup, Que., born at Chlorydormes, Que., Jan. 20, 1876.

R. H. Bell, General Agent, Canadian Northern Ry., Chicago, Ill., born at Toronto, Jan. 13, 1865.

G. McL. Brown, European Manager, C.P.R., London, Eng., born at Hamilton, Ont., Jan. 20, 1866.

W. H. Burr, Traffic Manager, Dominion and Western Express Co's., Toronto, born at Bloomington, Ill., Jan. 19, 1864.

W. A. [illegible], Assistant to Assistant Chief Engineer, C.P.R., Eastern Lines, Montreal, born at Galt, Ont., Jan. 22, 1877.

J. E. Dalrymple, Vice President, G.T.R., G.T.P.R., and Central Vermont Ry., Montreal, born there, Jan. 1, 1869.

J. E. Everell, Superintendent, Montmorency Division, Quebec Ry., Light and Power Co., Quebec, born at Cap Rouge, Que., Jan. 1, 1863.

Sir Sandford Fleming, K.C.M.G., director, C.P.R., born at Kirkcaldy, Scotland, Jan. 7, 1827.

W. H. Geugeon, Locomotive Foreman, C.P.R., Cartier, Ont., born at Point Alexander, Ont., Jan. 16, 1872.

Gordon Grant, Chief Engineer, National Transcontinental Ry., Ottawa, born at Dufftown, Scotland, Jan. 2, 1861.

H. V. Harris, ex-General Manager, Midland Ry. of Nova Scotia, now of Louisville, Ky., born at Devonport, Eng., Jan. 16, 1857.

G. F. Hichborn, formerly Agent, Great Eastern Fast Freight Line, New York, born at Boston, Mass., Jan. 13, 1875.

C. W. Houston, Superintendent, Duluth, Rainy Lake and Winnipeg Ry., Virginia, Minn., born at Hardwick, Vt., Jan. 15, 1858.

Carl Howe, Manager, New York Central Fast Freight Lines, Chicago, Ill., born at Berrien Springs, Mich., Jan. 11, 1870.

W. C. Hunter, ex-Manager, New Brunswick Coal and Ry. Co., Sussex, N.B., born at St. John, N.B., Jan. 4, 1865.

W. J. Hunter, Division Freight Agent, G.T.P.R., and Commercial Agent, G.T.R., Winnipeg, born at Toronto, Jan. 10, 1864.

H. G. Kelley, Vice President, G.T.R., Montreal, born at Philadelphia, Pa., Jan. 12, 1858.

James Kent, Manager, C.P.R. Telegraphs, Montreal, born Jan. 15, 1854.

A. J. McGee, Secretary-Treasurer, Timiskaming and Northern Ontario Ry., Toronto, born at Lachine, Que., Jan. 24, 1876.

G. C. Martin, General Freight and Passenger Agent, Toronto, Hamilton and Buffalo Ry., Hamilton, Ont., born at Creemore, Ont., Jan. 2, 1866.

G. Pepall, Assistant Foreign Freight Agent, G.T.R., and Agent, National Despatch-Great Eastern Line, Toronto, born at High Wycombe, Bucks, Eng., Jan. 15, 1849.

W. Phillips, European Traffic Manager, Canadian Northern Ry. and Canadian Northern Steamships, Ltd., London Eng., born in Toronto, Jan. 31, 1870.

W. Pratt, Superintendent, Sleeping and Dining Cars and Hotels, Canadian Northern Ry., Winnipeg, born at Sibbertoft, Northamptonshire, Eng., Jan. 18, 1870.

John Pullen, President, Canadian Express Co., Montreal, born at Shepton Mallet, Eng., Jan. 23, 1863.

L. J. Rouleau, Travelling Freight Agent, G.T.R., and Agent, National Despatch-Great Eastern Line, Montreal, born there, Jan. 6, 1879.

B. G. F. Rutley, ticket agent, C.N.R. and G.T.P.R., Fort Garry Union Station, Winnipeg, born at Chatham, Ont., Jan. 25, 1879.

S. J. Shannon, Comptroller and Treasurer, Intercolonial Ry., Moncton, N.B., born at Halifax, N.S., Jan. 18, 1865.

J. G. Sullivan, Chief Engineer, C.P.R. Western Lines, Winnipeg, born at Bushnell's Basin, N.Y., Jan. 11, 1863.

Ross Thompson, Chief Engineer, St. John and Quebec Ry., Fredericton, N.B., born at Newry, Ireland, Jan. 1, 1865.

J. A. Villeneuve, Comptroller and Treasurer, Richelieu and Ontario Navigation Co., Montreal, born there, Jan. 4, 1864.

O. C. Walker, Inspector, Refrigerator Service, C.P.R. Western Lines, Winnipeg, born at Newport, Mon., Eng., Jan. 31, 1877.

F. J. Watson, Assistant General Freight Agent, G.T.R., Montreal, born at Toronto, Jan. 12, 1866.

G. H. Webster, C.E., Vancouver, B.C., born at Creemore, Ont., Jan. 31, 1858.

T. H. White, Chief Engineer, Canadian Northern Pacific Ry., Vancouver, born at St. Thomas, Ont., Jan. 27, 1848.

A. Wilcox, General Superintendent, Western division, C.N.R., Edmonton, Alta., born at Kincardine, Ont., Jan. 2, 1865.

Railway Route Maps Approved.

The Minister of Railways approved of the following route maps, Nov. 19:—

ALBERTA INTERURBAN RY.—Calgary to Cochrane, about 45 miles.

CANADIAN NORTHERN RY.—From Craven northerly to tp. 25, r. 19, west of 2nd m., 39 miles.

From MacRorie southeasterly, 44 miles.

CANADIAN PACIFIC RY.—Grade revisions on main line west of Calgary, about 21 miles.

Grade revision on main line between Ross Peak and Six Mile Creek, B.C., about 20 miles.

Grade revision on main line between Chase and Salmon Arm, B.C., about 25 miles.

Grade revision on main line between Indian Head and Qu'Appelle, Sask., about 8 miles.

Revision of Bassano easterly branch, 118.1 miles.

Revision of Swift Current northwesterly branch, 11.84 miles.

MONCTON AND BUCTOUCHE RY.—Buctouche to Richibucto, N.B., about 20 miles.

WESTERN DOMINION RY.—From tp. 6, r. 1, west of the 5th m., to mile 130, near Calgary, Alta., 130 miles.

Specifications for Railway Crossing Signals.

The Board of Railway Commissioners passed general order 96, Dec. 11, providing the following specifications for signals at highway crossings:

The signal must be placed upon a post of suitable structural material. If the post is made of wood, it must be of sound timber not less than 8 x 8 ins. and 18 feet long, and shall be firmly set in the ground to a depth of 4 ft. If it is made of iron or steel, it shall be not less than 4 ins. in diameter, shall extend at least 12 ft. above the ground, and shall be firmly bolted to a concrete or other foundation constructed below the frost line.

A bell, which shall emit a clear, loud volume of sound under all weather conditions, must be used.

A sign shall be placed upon the same post as the bell, with the word "danger" upon it in letters not less than 6 ins. long, to be illuminated, so as to be plainly visible after sunset. There may be added to the post, if so desired, the railway crossing sign provided for by sec. 243 of the Railway Act.

The bell and the illumination of the sign shall be controlled and operated automatically by the approach of trains, in such manner that only approaching trains shall operate the signal.

Any order of the Board providing for the installation of a highway crossing signal and referring to 'Standard Specifications for Highway Crossing Signals" is to be deemed as intended to be a reference to the specifications herein adopted.

These standard specifications come into force the date of this order, and apply to all highway crossing signals hereafter installed.

General order 12915, Feb. 7, 1911, approving specifications for the installation of electric bell signals at highway crossings, is rescinded.

Government Railways Management.—Replying to a question in the House of Commons, Dec. 4, the Minister of Railways said the whole question of management of the Government railways was under consideration, and he had no information to give as to which course the Government would be likely to take.

Traffic Orders by the Board of Railway Commissioners.

The dates given for orders are those on which the hearings took place and not those on which the orders were issued.

Wabash Rd. Cartage Tariff.

18088. Nov. 21. Re Wabash Rd. tariff charge for cartage, as shown in its Supplement 4 to C.R.C. 543, and the request of the Board that the company show cause for such increase. It is ordered that the effective date of item 40A of the said tariff, Supplement 4 to C.R.C. 543, covering the increased charge for cartage, be postponed to and including Dec. 31, 1912.

C.O.R. Tariff on Canned Goods.

18107. Nov. 22. Re application of Dominion Canners Limited, of Hamilton, complaining of refusal of Central Ontario Ry. to route shipments of canned goods via G.T.R. at same rates as via C.P.R. to the same points of destination. It is ordered that Supplement 6 to Central Ontario Ry. Special Joint Freight Tariff on Canned Goods, C.R.C. 298 (G.T.R. Co.'s C.R.C. No. E. 1928), in so far as it affects the joint rates from points on the Central Ontario Ry., as being in contravention of the second clause 1 of order 8984, Dec. 11, 1909, be disallowed; and that the rates of Tariff C.R.C. 298 from the Central Ontario stations be restored, with leave to the said railway companies to apply to the Board for a hearing.

Grain Rates from Grenfell, Sask.

18109. Nov. 22. Re application of Grenfell Milling and Elevator Co., Grenfell, Sask., for order directing the railways interested to provide a through rate on grain products from Grenfell to Glenavon and Kipling, via Regina. It is ordered that the C.P.R. and the Canadian Northern Ry. be required jointly to file a tariff of through rates on grain products, in carloads of the minimum weight of 30,000 lbs. per car, from Grenfell, via Regina, at 18½c. per 100 lbs. to Glenavon, Sask., and 19c. per 100 lbs. to Kipling, Sask., the tariff to be made effective not later Dec. 16, 1912.

Coal Rate, Detroit to Windsor.

18121. Nov. 26. Re application on behalf of the Windsor, Walkerville, and Sandwich boards of trade, protesting against the increased rate on coal proposed under C.P.R. Tariff, Supplement 9 to C.R.C. E. 1606, and the Pere Marquette Rd. Tariff, C.R.C. 1539; and applying for an order postponing the effective dates of the tariffs until a hearing can be had. It is ordered that, pending a hearing of the application by the Board, the Pere Marquette Rd. Tariff, C.R.C. 1539, and the rate on coal from Detroit, Mich., to Windsor, Ont., as published in C.P.R. Supplement 9 to Tariff C.R.C. E.1606, be suspended for 60 days from Dec. 1, 1912.

Switching Tolls in Quebec City.

18135. Nov. 27. Re complaint of Quebec board of trade, and others, against the tolls charged by the C.P.R. for switching traffic, in carloads, originating at, or destined to, points on the Grand Trunk, Quebec Central, and Intercolonial Railways, between the ferry dock and tracks and sidings in Quebec city. It is ordered that, without prejudice to the pending inquiry into interswitching services and tolls generally, and subject to any order that may be made in that inquiry, the tolls charged by the C.P.R. for interswitching the said traffic for any distance within, and including, four miles from Point-a-Carey wharf, shall not exceed 1 cent per 100 lbs., subject to a minimum charge of not more than $3 a car, to or from private sidings, and 1½ cent. per 100 lbs., subject to a minimum charge of not more than $3 a car, to or from public team tracks; the tolls to be payable by the shipper or consignee, and to become effective not later than Dec. 9, 1912.

Temporary Advance in Demurrage Rates.

18178. Nov. 28. Re application of C.P.R., G.T.R., Canadian Northern Ry. and Michigan Central Rd., on behalf of themselves and of other railway companies, for permission to increase, temporarily, the toll for car detention by shippers or consignees, with the object of minimizing the misuse of freight cars for storage purposes and alleviating the car shortage and congestion of traffic. It is ordered that, on the publication and filing of tariffs therefor, and for the period commencing Dec. 15, 1912, and terminating March 31, 1913, both inclusive, the said companies be permitted to increase the car service or demurrage toll prescribed by order 906, Jan. 25, 1906, from $1 a day to $2 a day for the first 24 hours or any part thereof, and to $3 a day for each succeeding 24 hours, or any part thereof, for delay beyond the free time allowed by the said order for loading or unloading cars; provided that this order shall not apply to cars held in transit at stopover points under published tariffs filed with the Board.

Grand Trunk Pacific Ry. Freight Tariff.

18208. Nov. 22. Re application of Grand Trunk Pacific Ry., under sec. 327 of the Railway Act, for the approval of its Standard Freight Mileage Tariff, C.R.C. 12, to apply between stations in Alberta and British Columbia, between Thornton, Alta., and Tete Jaune, B.C. It is ordered that the company's said Standard Freight Mileage Tariff be temporarily approved, pending the result of the enquiry by the Board into the rates charged generally by railways west of and including Crowsnest, Canmore, and Thornton.

Coal Rate, Detroit to Windsor.

18210. Dec. 3. Re application on behalf of the Windsor, Walkerville, and Sandwich boards of trade, protesting against increased rate on coal from Detroit to Windsor, Walkerville, and Sandwich, Ont., and applying for order postponing the effective date of the said rate until a hearing can be had. It is ordered that, pending a hearing of the application by the Board, the rate of 40 cents a net ton from Detroit to Windsor, exclusive of switching charges, as published in Michigan Central Rd. Supplement 14 to Tariff C.R.C. 1288, be suspended for 60 days from Dec. 1, 1912.

Refrigerator Cars for Less than Carloads.

General order 98. Dec. 6. Re application from Sanitaris, Limited, Arnprior; White and Co., Toronto; the Board of Trade of Hamilton; and others, for order requiring railway companies during cold weather to furnish heated refrigerator cars for carriage of perishable freight in less than carload quantities. It is ordered that, until further ordered by the Board, upon the receipt of reasonable notice from the shipper that such is required, railway companies operating in Eastern Canada, which own refrigerator cars, and according to their respective powers, furnish to any shipper, or combination of shippers, a heated refrigerator car, or cars, for the carriage, during cold weather, of fruit, vegetables, and eggs, in less than carload quantities, the same to be carted by the shipper, and loaded in the car by the shipper, in the order in which the shipments are to be unloaded; provided that under this order the carrier be not required to accept shipments necessitating more than five openings of any such car for unloading purposes; to furnish heated cars for transhipments from the original car for destinations off the route of the car; to accept less than a total weight of 12,000 lbs. in any such car, or a less aggregate [illegible] lbs. distributed proratably over the various shipments in any car; to accept such shipments unless the freight charges are prepaid; to assume liability for loss or damage to the property by frost while in the car, if caused by the opening of the car for loading or unloading purposes, or after it has been unloaded from the car.

Cartage on Freight.

General order 99. Dec. 18. Re [illegible] tariffs of railway companies, in crossing charges for cartage, and the request of the Board that the said companies show cause for such increases. It is ordered that the special tariffs of the railway companies, the effective dates of which were postponed to and including Dec. 31, 1912, by orders 17911, 18088, and 18153, be disallowed; and that, in lieu thereof the companies may make effective on statutory notice, special tariffs of tolls chargeable for cartage at those points in eastern Canada where cartage services are rendered by the said companies, or their agents, which shall not exceed 2½ cents per 100 lbs., provided that a minimum toll may be charged for the cartage of any single complete shipment, which minimum toll shall not exceed 15 cents.

The New Montreal Harbor Commission.

Ottawa press dispatches of Dec. 24, to daily papers supporting the Dominion government, and which are therefore, probably semi-official, say that the new Harbor Commission for Montreal will consist of W. G. Ross, Farquhar Robertson and E. A. Labelle, who will succeed G. W. Stephens, C. C. Ballantyne and L. E. Geoffrion, resigned, effective Dec. 31, 1912.

W. G. Ross was born in Montreal, Aug. 6, 1863, and engaged in auditing and accountancy work with his father as early as 1880. He was subsequently, successively, Secretary, Treasurer and Assistant Manager, Windsor Hotel Co., Montreal, and in 1892 became associated with Jas. Ross, who was then developing electric railways in Canada, and organizing their finances. He has been Comptroller, Secretary-Treasurer and Managing Director, Montreal St. Ry., also Managing Director, Montreal Park and Island Ry., and General Manager, Suburban Tramway and Power Co., now all combined as the Montreal Tramways Co., Treasurer, Mexican Light, Heat and Power Co., and is a director, Dominion Steel Co., and President, Asbestos Corporation of Canada, as well as being connected with a number of other companies with which the same financial interests are concerned. He was President, Canadian Street Railway Association for the year 1905-06.

Farquhar Robertson has been associated with the coal trade for a number of years, and has represented St. Andrew's ward in the Montreal city council for six years. He was Vice President, Montreal board of trade in 1908, and President in 1909.

E. A. Labelle is General Manager, St. Lawrence Flour Mills Co. and prior to holding that position had been connected with the Ogilvie Flour Mills, Ltd., since 1883. He was Lieutenant-Colonel of the 65th. battalion Mount Royal Rifles, transferred to the reserve of officers and later appointed Brigadier 19th Infantry Brigade.

The Minister of Marine introduced a bill into the House of Commons, Dec. 6, to amend the bill defining the jurisdiction of the Board, giving it complete control over the Montreal harbor, which is at present shared with the Marine Department, and to remove a number of minor harbors, which are at present controlled in conjunction with a portion of the ship canal, from its jurisdiction.

Electric Railway Department.

Montreal Tramway Company's Track Construction and Method of Cost Keeping.

In making up the type of this article by J. D. Evans, Chief Engineer and Superintendent of Construction, in Canadian Railway and Marine World for December, the two concluding paragraphs, which should have appeared on pg. 619, were omitted. They refer to the intersection work, and are as follows:—

After the new material has been all unloaded and placed, the crane car is then put to work loading the cars with the old intersection and returns to the store yard. With the use of the crane car the cost of our work has been reduced and it is absolutely necessary on account of the increased weight of the intersection parts, also we do not require as many laborers, and the street is not blocked with any of the intersection material. As soon as the new intersection is placed traffic is resumed and we then start the excavation, the sub-grade being 24 ins. below the top of rail. This work is carried on hand in hand with the placing of the ties. We have adopted long ties, that is ties varying in length from 8 ft. to 20 ft., the longest ties taking in the four rails. The attached plan shows the spacing of the special ties, with the list as to sizes that are in addition to the regular standard 8 ft. ties.

We use all ties sawn at least on two sides, the extra long ties being sawn on four sides, no hewn ties being allowed where concrete slab construction is adopted, on account of their varying thickness and unevenness. As fast as the excavation is completed and the ties placed in final position we block up the intersection per plan 164 T-G., so that the concrete slab can be laid and allowed to thoroughly set without carrying any load from the cars while running over the intersection. After the concrete has set for ten days the intersection is tamped up with one [illegible] of sand under the ties and brought to final surface. After this has been completed the concrete is placed for the pavement. As soon as this concrete has set, from four to seven days, we start laying the pavement which completes the job.

We feel that the Montreal Tramways Co.'s work ranks with the best of railways in America, and we believe the reason for this is on account of the efficiency and loyalty of the employes working together systematically.

Five Car Trains on Winnipeg, Selkirk and Lake Winnipeg Railway.

The accompanying illustration shows a five car multiple unit train, which is operated for excursion business on the W.S. & Lake Winnipeg Ry., a subsidiary of the Winnipeg Electric Ry., between the two terminals, Winnipeg and Selkirk, about 20 miles, making the run in 40 minutes each way. The train consists of 3 power cars in multiple and 2 trailers, with seating capacity for 320 passengers. The cars were built by the Winnipeg Electric Ry. at its own shops and have Canadian General equipment throughout. They are heated with hot water and hot air heaters, but the hot water is found much the better for the Manitoba climate. The train is operated by motorman, conductor and trainman, and as soon as the men became conversant with the equipment the operation gave no trouble.

Multiple Unit Train on Winnipeg, Selkirk and Lake Winnipeg Ry.

The train is very popular for excursions, securing business that would go to the steam railway if a solid train was not operated. During 1912 up to Mar. 30, the company carried 55 excursions from Winnipeg to Selkirk, ranging from 150 to 4,000 passengers per excursion. Then number of passengers carried between the two points for the first 11 months of the year was as follows:—Jan., 21,084; Feb., 21,207; March, 22,480; April, 21,783; May, 27,608; June, 39,087; July, 53,681; Aug., 54,673; Sept., 39,687; Oct., 37,495; Nov., 30,930.

The W.S. & L.W. Ry. is operated under G. Pettingill, Superintendent, who has his office at Selkirk.

Gas Electric Trains for suburban service are to be employed by the Pittsburg & Lake Erie Rd. in the district tributary to Pittsburgh, Pa. A single train, consisting of a gas-electric motor car and one trailer, will first be placed in operation on the regular local schedule as a test of the system. It will run on the four-track main line in connection with the regular steam trains. It is contemplated that the service will extend from near McKeesport, 17 miles south of Pittsburgh, to Beaver Falls, 32 miles north of the city. The motor car is 42½ ft. long, 10 ft. 5 in. wide and weighs 36 tons. It is driven by two 100 h.p. motors, operating at 600 volts. Its capacity is 42 people. The trailer is 45 ft. long, weighs 22 tons and seats 80 people. Both cars are of steel.

Lulu Island Railway Terminal in Vancouver.

The B.C. Electric Ry. has arranged with the city of Vancouver for the construction of a new terminal for its Lulu island interurban railway. This line extends from Vancouver through Point Grey to Eburne, from which point one division runs across Lulu island to Steveston and another extends along the north arm of the Fraser river to New Westminster. Along this route settlement has been very rapid of recent years and a large commuters' traffic is now carried on over the division. The line now enters Vancouver by a bridge spanning False creek, terminating at a station at the water level. This location is inconvenient, inasmuch as the station is located on low ground and passengers transferring to city lines must either walk up a steep hill or climb a spiral stairway to the level of the Granville street bridge, over which all the connecting city lines, except one, run.

The new arrangement proposed by the company is the location of an interurban terminal at the south end of Granville street bridge. By this plan interurban passenger cars will not be obliged to cross the False Creek bridge and they will be taken into the city directly on a level with the Vancouver city cars. The terminal will also be of advantage to the city system, as it is located near 4th and Granville streets, an important city transfer point.

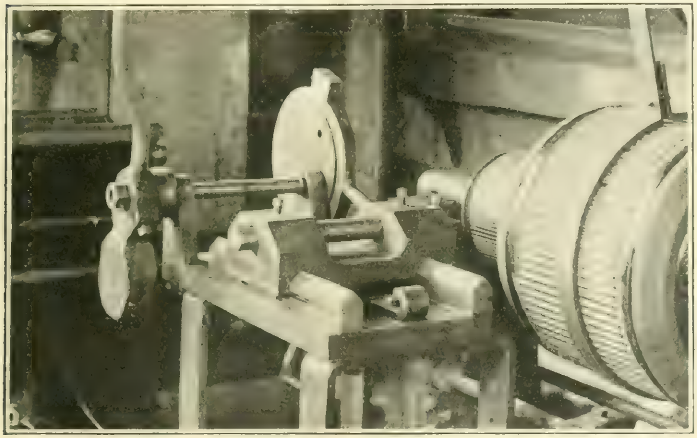
The station will consist of two wings, each about 40 by 28 ft., connected by a covered passage way 25 ft. wide, ample to accommodate the traffic from the interurban lines to the city system. In the south wing will be located the ticket office, agent's office, etc., while in the opposite wing will be a general waiting room and separate ladies' room. The terminal, being located on made ground, will be of wood construction. The plans call for a handsome structure which will cost between $30,000 and $40,000. The trackage arrangements will provide a terminus for the Lulu island cars on the west side of the station. The east frontage of the station will be located directly on the Granville street bridge, all the Fairview cars of the company passing this point on their way to the business centre of the city.

The first cars were run on the Toronto civic railway, Dec. 18.

Commutator Slotting Device at Winnipeg Electric Railway Shops.

It is a well known fact to all street railway shop men that the mica insulation between the individual segments of the commutator does not wear down at anything like as rapid a rate as the copper of the segments themselves. In consequence, it is necessary periodically to remove the mica slightly below the surface of the copper, as otherwise the brushes would not have a good bearing, but would skip from projecting fin of mica to the next projecting fin, with a great deal of incidental sparking.

In the shops of the Winnipeg Electric Ry. there is a simple little device for performing this operation of slotting down the mica mechanically. The machine in operation is shown in the accompanying illustration. The armature is mounted on V blocks on a stand about 30 ins. above the ground. In front and to one side is the machine for slotting. This machine consists of a bed plate, similar to the ways of a lathe, mounted on a light iron forged frame. This cast plate has V ways on its upper surface, on which a small carriage operates. Mounted in this carriage from side to side, is a bar, in the far end of which is carried a small parting tool, secured by a set screw. The main bar is secured in the carriage likewise by set screws.



Device for Slotting Commutator Insulation.

At the far end of the base, on two standards, is supported a cross shaft with a handle on the left end and an eccentric sheave and strap on the other. The latter is connected by a small rod to the carriage, the latter receiving its motion along the ways through this means.

The operation is simple. The slotting machine is set parallel to the armature, and with the slotting tool on a level with the centre of the armature. The tool rod is adjusted for depth of cut by the set screws in the carriage. The length of stroke is likewise adjusted by the small stop between the ways at the front end of the base. The carriage can thus be moved over just the correct amount, and not ram the end windings of the armature. Around the outside of the armature is clamped a band, with a projecting handle. By this handle, the operator locates the slot accurately with one hand, and with the other, draws over the slotting lever. Moving the armature around to the next position the operation is repeated, slotting out the surplus mica almost as rapidly as the operator can move.

New Route Between Vancouver and New Westminster.

The route of the Westminster interurban line, the original line connecting New Westminster with Vancouver and which started operation in 1891, has been altered by the recent completion of the Highland Park cut off. The old line entered New Westminster along 12th street, along which there was a very steep grade, rendering extreme care necessary in the operation of heavy interurban passenger cars or freight trains such as are used on this branch. The Highland Park cut off leaves the old interurban line at Highland Park, and proceeds by a winding route, taken for the sake of easier grades, into New Westminster. The running time between Vancouver and New Westminster has been lessened by ten minutes because of the change of route and the service is now operated on safer lines. With the Highland Park cut off in service it will be possible for the company to carry out its plans of operating two car trains between New Westminster and Vancouver. This is rendered necessary by reason of the rapid growth of the suburban traffic along the line both in the vicinity of Vancouver and New Westminster. The section of the Westminster interurban line which has been abandoned for interurban traffic will now be covered by cars connected with the New Westminster city system.

Water Lubrication of Street Railway rails has been in use for some time on a street in Rome, Italy, carrying heavy traffic. The street is on steep grade and has numerous sharp curves. At the top of the slope a stream of water is fed into each of the four rails of the double track line and flows downhill along the groove of the rail. Every 20 to 30 ins. a small wooden block is wedged in the groove, reaching up to wheel flange level, to break the flow of the water. It is reported that cars ride very smoothly on this lubricated track and the grinding noise of cars rounding curves is practically eliminated, while also the general noise of the car traffic is reduced. Grease lubrication at curves is rendered unnecessary.

British Columbia Electric Railway Company's Equipment Orders.

The B.C. Electric Ry. has ordered 60 city passenger cars from the Preston Car and Coach Co. This is the initial order for 1913 delivery. The cars are to be of double end type and 44 ft. long. The specifications are subject to minor changes, but the cars will be of the latest model throughout. Delivery will be made during April and May.

The company expects to operate its interurban line from Victoria north through the Saanich peninsula, 22 miles in length, early in January. For this line orders for rolling stock have been placed as follows:—2 baggage and express cars from the Niles Car Co., and 6 passenger cars from the St. Louis Car Co. For freight service 15 flat cars and 25 box cars have been ordered from the Seattle Car Co., and two 45 ton locomotives will be taken from the company's mainland system for use on the new interurban line.

For service on its mainland freight lines, the company has recently ordered 25 box cars from the Seattle Car Co., and five 50 ton locomotives from the Westinghouse Co. Other rolling stock recently ordered by the company consists of 2 snow sweepers from the Ottawa Car Co., and 6 Hart-Otis steel dump cars.

During December full delivery was made of the 24 interurban cars ordered from the St. Louis Car Co. last summer, and this equipment is now in service. The initial shipments have also been made by the Brill Co. on the large order for city passenger cars recently placed.

In announcing its contract with the Preston Car and Coach Co., the management stated that it was not the company's intention to abandon the car building work in connection with its New Westminster shops. It was stated that the schedule for new rolling stock for all lines of the system for 1913 is now being prepared and in this programme ample work would be allotted the New Westminster plant. At these shops is now being assembled and finished shipments of 25 steel city passenger cars which have been constantly arriving on an order placed some time ago in Great Britain.

Abolition of Grade Crossings in British Columbia.

The B.C. Government has declared against grade crossings, where these can possibly be avoided. The municipal council of South Vancouver decided recently to establish a grade crossing at Rupert street, where the road crosses the Westminster interurban line of the B.C. Electric Ry. There is a subway at the point but it was claimed that this was too low for ordinary traffic. The B.C. Electric Ry. entered a protest on the plans of the municipality, and ratepayers holding property in the vicinity also entered objections. The question was argued before the Provincial Minister of Railways at Victoria. After hearing both sides, the Minister stated that under no circumstances would he favor the establishment of a grade crossing at the point, the policy of all growing communities was to avoid grade crossings wherever possible and the idea of the South Vancouver authorities in substituting a level crossing for a subway at Rupert street would be a distinct retrograde movement. A few days after the argument the Minister announced his decision to the effect that the grade of the railway should be raised two feet at the road crossing, thus making possible a subway which would meet the conditions of the case.

British Columbia Electric Railway Company's Report.

The report for the year ended June 30, submitted at the annual meeting in London, Eng., Dec. 10, states that the business has continued to grow very rapidly, and the gross receipts show an increase of $1,601,994, or over 36%, and the net earnings, including income from investments and subsidiary companies, and after charging renewals, show an increase of $401,837, or 27%, over the preceding year. From the close of the period under review to September 30, there was a still further increase in gross earnings of $352,233, or 27%, and in net earnings $138,204, or 31%. The increase is well distributed over every department and all branches of the system, but is especially noticeable in Victoria.

[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	$ [illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
	$ [illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
	£ [illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
	6,590	[illegible]	[illegible]
[illegible]	$ 257,670	[illegible]	6
[illegible]	$ 264,260	9	2

During the whole of the year very large sums have been involved in various works and extensions under construction, and have consequently remained unremunerative.

The following charges have been made against revenue account:—

[illegible]	[illegible]	[illegible]	[illegible]
	£97,501	13	6
[illegible]	£ [illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
	£ [illegible]	[illegible]	[illegible]
Interest on debentures and [illegible]	£[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]

From this the directors have decided to recommend payment of dividend on deferred [illegible] for six months to June 30, [illegible], to transfer [illegible] 9s. 7d., a total [illegible] 9s. 7d., and to carry forward to next year £7,731 19s. 7d.

[illegible] capital [illegible] June, 1911. [illegible]

The growth of [illegible] indicated by the following figures:

	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]

The number of passengers carried was [illegible], an increase of 15,612,718. The number of lamps in use at June 30 was 735,426, an increase of 171,884.

In accordance with the established custom for some of the directors to visit British Columbia annually, T. Blundell Brown went there in May, and during his stay thoroughly discussed and investigated existing conditions and future prospects with the management and with many leading British Columbians. He reports much prosperity throughout the country, and is well impressed with the great expansion of the enterprise since his last visit four years ago. He is entirely convinced that the progressive policy adopted by the company is wise and justifiable.

Very important works have been carried out during the year, and are still under construction.

POWER PLANTS. The extension of the hydro electric power plant at Lakes Coquitlam and Buntzen has been successfully carried on, and will be completed during next summer. Already the work has provided the company with largely increased water storage. The magnitude of the undertaking may be gathered from the following particulars: A new dam is being built at lake Coquitlam, maximum height, 98 ft.; width at base, 600 ft.; length at crest, 850 ft.; width at crest, 40 ft.; storage capacity, 7,404,000,000 cub. ft., giving an available reserve during a dry season of 53,700,000 k.w.h. of electrical energy; 1,055,000 cub. yds. of material will have been handled on completion of the works; the number of men employed on the work during the last six months has varied from 1,289 to 1,514. An additional and separate power house of a massive character, with foundations on the solid rock, is being built at Lake Buntzen. Three hydro electric units will be installed therein, having a combined capacity of 40,500 h.p. These, added to the units already in operation in the old power house, will give a total available supply of 82,500 electrical h.p. The directors had hoped that these new units would have been ready for operation in November, but owing to labor troubles experienced in Great Britain, considerable delay occurred in the manufacture of the generators, and it was found impossible to ship the first generator from Birkenhead before Oct. 12. It is expected that the first unit will be in service during February. The completion of the works above referred to will place the company, so far as power is concerned, in a very satisfactory position, and after February next, in return for the heavy capital expenditure of the past three years, it will have a very large power development at an economical figure, and one in which maintenance and operating expenses will be reduced to a minimum. In every detail the most modern practice in hydro electric power plant design has been adopted the best features of European and American design having been combined to produce a plant which will, undoubtedly, be one of the finest in the world.

On Vancouver island the company is also largely increasing its hydro electric power installation to meet the rapidly increasing business in Victoria and surrounding districts. The first Jordan river installation was put into operation in Feb., 1912, and consisted of one unit of 6,000 h.p. impulse wheel on the shaft of a 4,000 k.w. alternator, with all necessary complementary equipment. A second unit of equal capacity has been completed within the last few weeks, and is now delivering power in Victoria. The dam connected with this installation was completed by May and has a capacity of 327,000,000 cub. ft., which is equivalent to the storage of 5,960,000 k.w.h. of electrical energy. The company is also constructing, near Victoria, with a separate transmission line, an auxiliary steam plant having an initial capacity of two 2,000 k.w. units. The design has been laid out so that in the future new units can be added very economically and quickly.

NEW LINES OF RAILWAY. The railway from Victoria through the Saanich peninsula, about 20 miles, is now nearing completion, and the board hopes that it will be in operation during Dec., 1912, and some 8 miles radiating from New Westminster have either been completed during the year or are approaching completion. The company is also building several extensions in North Vancouver, South Vancouver, Point Grey and Victoria, aggregating over 15 miles. Large purchases of rolling stock have been made, in addition to which the company's car shops at New Westminster have been kept working to full capacity, and have turned out a large number of cars. The terminal station and central offices in Vancouver have been completed, and constitute one of the most conspicuous and important structures in the city. The offices are now occupied by the staff, and the excellent accommodation which they provide should greatly facilitate the administration of business.

During the year the company was compelled to suspend traffic in Point Grey municipality owing to legal proceedings having been instituted which challenged the validity of its franchises. This matter has been satisfactorily terminated by a vote of the people, who by a very large majority passed a bylaw confirming the franchises for the unexpired 37 years.

Expenditure on Capital Account.

Rolling stock	$ 725,263.74
Permanent and double tracking and sundry improvements	926,552.71
Track extensions	648,928.10
Lighting extensions	278,046.67
Power extensions	137,499.27
Steam plant	480,421.48
Lands and buildings	520,006.04
Electrical machinery	321,441.42
Extending light and power system	284,047.01
North Vancouver—Rolling stock, meters, transformers and [illegible] installations	46,389.78
Sundries	99,930.85
Transmission lines and railway feeders	45,187.06
	$4,513,[illegible].13

Electricity on Italian Railways.—Some important changes are being made on the Milan-Gallarate-Portoceresio electric railway in the north of Italy. This line was one of the first to be installed in the country, and is on the point of adopting modern methods. The old steam plant of Tornavento, which was expensive to work and is now too small, will be shut down, and the current for the road will come from the large hydraulic plant of Varzo on the south side of the Simplon. Current at 45,000 volts is brought to Gallarate by a power line running along the railway, and the current for the cars is supplied by seven substations spaced along the line, instead of the four stations which were formerly used. Owing to the increased amount of power which the railway now has at its disposal, it is able to run heavier passenger trains than before and also does away with the use of steam locomotives on the freight trains. For the heavy passenger traffic there are used five large electric locomotives of 2,000 h. p. At the hours of light traffic the trains will be made up of a few motor cars, according to the usual method.

The Board of Railway Commissioners has authorized C. J. Laughlin, Jr., Vice President, or H. Rooke, Secretary of the Niagara, Welland and Lake Erie Ry., to prepare and file tariffs for freight and passenger traffic and of telegraph tolls.

Electric Railway Projects, Construction, Betterments, Etc.

Assiniboia, Man.—At a meeting of the council of this municipality, Dec. 4, a resolution was passed favoring the building of a municipally owned electric railway. It is said that if the project materializes it will be carried out in connection with a similar enterprise in the Fort Garry municipality.

Brantford and Hamilton Ry.—It is proposed, as soon as the necessary powers can be obtained, to extend the line to Galt, Ont., about 20 miles. The Galt line would start from the present line at Langford. Application is being made to the Dominion Parliament for authority to build the extension. (Aug., 1910, pg. 681.)

British Columbia Electric Ry.—On Nov. 30 the company started operating cars over the Highland Park cut-off on the Vancouver-New Westminster line. This cut-off saves ten minutes on the trip between the two cities. An arrangement has been made with the city as to the rental to be paid by the company for the use of the new Connaught bridge. Plans have been submitted for changing the location of the passenger station near the Granville street bridge, and it is reported that plans will shortly be submitted for additions to the company's car barns in Vancouver.

Press reports state that plans are being prepared for the extension of the company's lines in South Vancouver.

The Provincial Minister of Railways has approved of plans and specifications for a bridge to be erected at the upper crossing of the Coquitlam river, on the Port Moody and Coquitlam Ry., a branch of the B.C.E. Ry. The bridge will consist of three 50 ft. Howe truss deck spans with trestle approaches.

A car service was put in operation on the Hillside avenue car line in Victoria, Dec. 2. It is expected that the extension to Deep Cove, in the Saanich peninsula, will be opened for traffic early this year. Arrangements are being made for terminal facilities in Victoria at an estimated cost of $200,000, and for the erection of car barns at Deep Cove. The new steam plant at Brentward bay, Tod inlet, has been completed, and was put in operation Nov. 24. The plant is intended to be used in case of any accident to the Jordan river plant. (Dec., 1912, pg. 622.)

Burrard-Westminster Boundary Ry. and Navigation Co.—Application is being made to the Dominion Parliament to extend the time within which the lines authorized by the statutes of 1907, as amended in 1911, may be built. A. J. Kitto, Vancouver, B.C., is solicitor for the company. (Oct., 1912, pg. 520.)

Calgary Municipal Ry.—Bylaws are being submitted to the taxpayers for authority to raise by debentures and to expend $108,500 on 10.5 miles of new lines; and $68,400 on building second track on existing lines during 1913. (Dec., 1912, pg. 622.)

Edmonton Interurban Ry.—The directors have made two calls of 10% on the shareholders, the first due Dec. 17, 1912, and the second payable Feb. 18. C. E. Barry, Edmonton, Alta., is Secretary. (Dec., 1912, pg. 622.)

Edmonton Radial Ry.—The Edmonton, Alta., city council, Dec. 9, unanimously approved of plans submitted by Inspector Moir for the building of a system of radial railways, having a total length of 120 miles. The plan provides for lines all over the limits of the city, so that no building site will be more than three and a half blocks from a car line. It is intended to begin working out this plan early this year, during which it is proposed to add 18 miles to the existing lines, and to begin making permanent improvements upon all the streets on which it is proposed to build car lines. (Dec., 1912, pg. 622.)

Fort Garry, Man.—Application is being made to the Manitoba Legislature for an act authorizing Fort Garry municipality to build an electric railway, with terminals in Winnipeg. R. A. C. Manning is Reeve of the municipality.

Grand Valley Ry.—The Brantford, Ont., city council has authorized the company to fix up the line at once, on condition that $10,000 of back taxes are paid immediately, and the balance in two instalments on Mar. 1 and May 1.

Hull Electric Ry.—Application is being made to the Dominion Parliament for an act declaring the company's line to be a work for the general advantage of Canada, and authorizing it to extend the line into Ottawa, by an independent line or over the line of any other company with which an agreement may be made. The H.E. Ry. is owned by the C.P.R. (May, 1912, pg. 251.)

Kingston, Portsmouth and Cataraqui Electric Ry.—H. W. Richardson, President, has informed the Kingston, Ont., city council that the line is not for sale. The city desired to obtain an option on the property with a view of settling certain matters as to which there is a difference of view between the council and the company. (Dec., 1912, pg. 622.)

Moncton Tramways, Electricity and Gas Co.—The car line has been extended to the new Intercolonial Ry. shops at Moncton, N.B., and a car service was started on the extension Dec. 5. (Dec., 1912, pg. 622.)

Morrisburg and Ottawa Electric Ry.—The Ottawa city council had under consideration, Dec. 2, the question of the route of this projected electric railway into the city. The railway committee recommended a route along Riverside avenue and Main street to the proposed terminal station near the Ottawa East bridge. The report was referred to the board of control for discussion. Ewart, Scott, McLaren and Kelley, Ottawa, are representing the company. (Nov., 1912, pg. 574.)

Niagara, St. Catharines and Toronto Ry.—The first sod of the extension from St. Catharines to Niagara-on-the-Lake was turned, Dec. 2. It was expected to have five miles graded by the end of the year. When the spring opens the line will be completed, and it is expected to have it open for traffic by June 30. (Dec., 1912, pg. 622.)

Nipissing Central Ry.—The Board of Railway Commissioners has authorized the opening for traffic of the extension of the line from Haileybury to Liskeard, Ont. It is proposed to remove the car barns from North Cobalt to Haileybury. The present barns are too small, and are not central enough for the extended line. (Dec., 1912, pg. 622.)

Application is being made to the Dominion Parliament to extend the time for the building of the lines authorized in the statutes of 1907, as amended in 1908.

Ottawa Electric Ry.—We are officially advised that the company is building an addition to its Cobourg street barn, which will add four to the six tracks already there, and give accommodation for 30 more cars. (Nov., 1912, pg. 574.)

Porcupine Rand Belt Electric Ry.—The organization of this company was reported completed in Toronto, Nov. 26, with the following officers:—President, F. G. Earl, New York; Vice Presidents, S. A. Adila, Toronto; R. Mallett, Dublin, Ireland; W. J. Adams, [illegible], Ont.; Secretary-Treasurer, H. S. Rowland, Toronto; Chief Engineer, C. R. Fullerton, Liskeard, Ont. The company holds an Ontario charter of incorporation; it has secured a Quebec charter, and it is proposed to secure Dominion incorporation. Preliminary surveys are said to have been made for several routes under existing charters, viz.:—From Dane via Larder lake to North Timiskaming and Liskeard; from Ruel C.N.R. to Lake Porcupine and the N.T.R. via W. Shining Tree lake and the Mattagami river, and from Dane to Swastika and the G.N. Bend, Montreal river to South Porcupine.

The gradients on these routes are reported to be fairly easy, and the cost of construction, it is said, will not be excessive. It is proposed to use single storage battery cars, with trailers for freight. There are several good water powers along the routes which it is proposed to develop for recharging batteries. The company is authorized to make agreement for running rights with railways with which its line may connect. According to press reports the company proposes to make the line a portion of an electric railway system extending from Quebec to Winnipeg. (June, 1912, pg. 310.)

Rainy River Radial Ry.—Engineers are reported to be at work making surveys for a line from Fort Frances to the Lake of the Woods, as the first section of the projected system. (May, 1912, pg. 252.)

St. Laurent, Que.—Application is being made to the Quebec Legislature to ratify an agreement between the St. Laurent municipality, Que., and the Franco-Belgian Investment Co., whereby the latter has been granted an exclusive franchise for 25 years for the construction of an electric railway, and the operation of other public utilities in the municipality. (Nov., 1912, pg. 574.)

Saskatoon Municipal Ry.—It has been decided that this is to be the general title of the electric railway which is being built in Saskatoon, Sask., for the city, by the Stone and Webster Engineering Corporation, Boston, Mass. The car barns have been completed, and a temporary track was laid from the C.P.R. to the car barns for the hauling in of the cars, which were delivered Nov. 30.

The city of Saskatoon is asking the Saskatchewan Legislature to authorize it to acquire the rights and powers of the Saskatchewan Power Co., incorporated by the Dominion Parliament in 1908. (Dec., 1912, pg. 623.)

Stratford Ry.—The city council has approved of a new bylaw granting the company a franchise for the building of an electric railway in Stratford, Ont., and the taxpayers will be asked to approve of it, Jan. 6. At the meeting of the council, Dec. 3, a letter was read from Sir Wm. Mackenzie, in which he said that construction would be started June 1, 1913, and the line would be completed by Dec. 31, 1914, provided the bylaw was carried by the people and confirmed by the Legislature. (Dec., 1912, pg. 623.)

Toronto Civic Car Lines.—The first section of the municipally owned electric railway in Toronto was put in operation Dec. 18. The line starts at the terminus of the Toronto Ry.'s Parliament street line on Gerrard street, and runs along that street to Main street, East Toronto. Cars were purchased in the U.S.; power is being supplied by the Hydro-Electric Commission. A seven minute service is to be maintained, with a 2c. fare, or six tickets for 10 cents.

A suggestion has been made that this line should be extended under the proposed Hydro-Electric municipal plans, through Agincourt and other points to Markham, with a branch to Locust Hill and other points.

The Arnold Co., of Chicago, who were appointed to report on the street railway service in Toronto and to suggest what additional lines are necessary, have presented a report, accompanied by a map which shows new north and south lines on Greenwood avenue, Pape avenue, Terauley street, Claremont street, and its extension to St. Clair avenue and Dufferin street; a cross town line from Yonge to Bathurst street, running along St. Patrick street, and a line along Bloor street to Roncesvalles avenue. A number of lines in the districts annexed since 1891 are also recommended, as well as the routes upon which lines should be built outside the present city limits as the growth of the city demands. (Dec., 1912, pg. 623.)

The Winnipeg Electric Ry. operates 35 miles of single and double track lines in the city, and owns or controls, in and out of the city, 120 miles of track. It was expected that 12 miles of additional track would be added by Dec. 31, 1912. Most of this mileage has been completed and is being operated over. The extensions on which work was being done during December were:—From Inkster avenue to the city limits on Main street; Academy road line; and from Stafford street to Ash street on Godfrey avenue.

At a meeting at which representatives of various municipalities were present, in Winnipeg, Dec. 11, a resolution was passed inviting the W.E. Ry. to take into consideration the desirability of building an electric railway to Portage la Prairie, Man. A committee was appointed to secure information and to prepare a general plan for submission to the company and to the municipalities interested. (Dec., 1912, pg. 623.)

Winnipeg to Portage la Prairie.—Press reports state that preliminary details are being worked out for the building of an electric railway from Winnipeg, via St. Francois Xavier, to Portage la Prairie, Man

Electric Railway Notes.

The Moncton Tramways, Electricity and Gas Co. received a new car recently for its suburban service.

The Hull Electric Ry. has started the operation of pay as-you-enter cars between Aylmer, Que., and Ottawa.

The St. John (N.B.) Railway has received the six car coaches recently ordered, and is waiting for the delivery of the trucks.

Eleven single truck cars have been delivered at Saskatoon, Sask., for the municipal electric railway, now under construction. The cars were built in the U.S.

The Fort William, Ont., city council has recommended to the joint board operating the Port Arthur and Fort William Electric Ry. that a five minute service be put on between the two cities.

A vote is to be taken in London, Ont., at the municipal elections, Jan. 6, upon the question of the operation of cars on Sundays. Since the last vote was taken, the city limits have been extended.

The Board of Railway Commissioners has approved of standard passenger tariff of maximum tolls for the Nipissing Central Ry., which is owned by the Province of Ontario and operated by the Timiskaming and Northern Ontario Ry. Commission.

The Saraguay Electric and Water Co. is applying to the Quebec Legislature for authority to change its title to the Light and Power Co. of Montreal, or the Montreal Public Service Corporation, and for power to acquire franchises for electric railways, etc.

The Hamilton St. Ry. has granted a 2 cent an hour increase to first and second year men, and a 3 cent an hour increase to third year men, with 2 cents an hour extra for overtime and Sundays. Proportionate increases have been given to the men on the Hamilton and Dundas Ry., the Hamilton Radial Ry., the Hamilton, Grimsby and Beamsville Electric Ry., and the Brantford and Hamilton Ry. All these lines are owned by the Dominion Power and Transmission Co.

The street railway committee of the Calgary, Alta., city council, has recommended that an experiment be made with the "trackless trolley" car in the city. Applications are being made for the extension of lines in various parts of the city, but while the committee is desirous of giving the public every accommodation, they don't see that there is any prospect of a number of the extensions asked for paying, hence the suggestion that the "trackless trolley" be tried.

In reference to the crossing of the Winnipeg Electric Ry. tracks by the C.P.R. at Logan avenue, Winnipeg, and the question of the apportionment of the cost of the protection provided there, which came before the Board of Railway Commissioners in Winnipeg, July 18, 1912, the W.E. Ry. having failed to file a statement showing whether the portion of its line to the C.P.R. shops is profitable or not, the Board has appointed A. Sullivan, barrister, Winnipeg, to make an enquiry to ascertain the facts.

The Minister of Labor has, according to an Ottawa press dispatch, received the report of the board of conciliation which was established for the adjustment of disputes between the Quebec Railway, Light and Power Co. and its electric railway employes. Men who have been employed more than one year will get 17½ cents per hour; two years, 18½c.; three years, 20½c.; 8th year, 21½c.; 13th year, 22½c. $6,000; wharfage, outward, $5,500; from local After Nov. 1, 1913, the schedule is increased one cent an hour. The company has, it is said, undertaken not to offer any objection to employes being members of the union, and will reinstate employes whose dismissal was called into question.

Clubhouse for British Columbia Electric Railway Employes.

The B.C. Electric Ry. is providing for the comfort and convenience of the motormen and conductors employed on its Vancouver lines by the construction of a five story club building at the corner of Main and Prior streets, Vancouver, directly opposite the company's principal car barns in the city. The building will have a frontage of 25 ft. on Main street and a depth of 60 ft. on Prior street. The Prior street frontage to the rear of the block is owned by the company and in the plans arrangement is being made for the extension of the block should the need arise.

On the 1st floor will be a general waiting room for the men and offices for the station master and inspectors. On the 2nd floor will be a large billiard room, with billiard and pool tables. On the 3rd floor will be the reading room, and about half the floor space of this flat will be used for lockers. The 4th floor will be divided entirely for lockers, this accommodation in connection with the third floor providing lockers for over 500 men. The gymnasium will be on the 5th floor, the entire flat being left free of obstruction as far as possible. A complete set of gymnasium apparatus will be installed. The upper floor will be reached by an elevator as well as a winding stairway. Lavatory accommodation will be provided on each floor. The company's architect has studied the plans of similar buildings operated by electric railways on the continent, for their men, thus arranging for a building adapted to local needs and conditions and up to date in every particular. The block will be of brick construction, the frontage being trimmed with terracotta. The estimated cost is between $30,000 and $40,000.

Personal Paragraphs.

F. H. WILSON, Director, Montreal Tramways Co., has been elected a director of the Merchants Bank of Canada.

E. L. WHITE, of Saskatoon, Sask., has been appointed by the city council, Manager of the municipal railway.

T. G. CONNON, dispatcher, British Columbia Electric Ry., has been appointed Chief Dispatcher, vice F. D. Picken, promoted. Office, New Westminster.

H. McDONALD, who some years ago was connected with the Cape Breton Electric Co. and the Sydney and Glace Bay Ry., died at Glace Bay, N.S., of which city he was Mayor, Dec. 3.

Mrs. Anderson, widow of the late Walter Anderson and mother of JAMES ANDERSON, Manager, Sandwich, Windsor and Amherstburg Ry., died at Ayr., Ont., December 12, aged 90.

G. O. D. OTTY, K.C., Hampton, N.B., who has been a member of the New Brunswick Public Utilities Commission since its inception, has been appointed Chairman, succeeding the late D. McL. Vince.

J. E. RICHARDS, General Freight and Passenger Agent, Chatham, Wallaceburg and Lake Erie Ry., has been admitted a member of the Eastern Canadian Passenger Agents' Association.

J. D. EVANS, M. Can. Soc. C.E., Chief Engineer and Superintendent of Construction, Montreal Tramways Co., has been appointed a member of the American Electric Railway Association's committee on way matters.

PATRICK DUBEE, Secretary-Treasurer, Montreal Tramways Co., and President, Canadian Street Railway Association, has been appointed a member of the American Electric Railway Association's committee on taxes and assessments.

F. D. PICKEN, heretofore Chief Dispatcher, British Columbia Electric Ry., New Westminster, has been appointed Superintendent of the Victoria-Saanich line, which is under construction and will be put into operation shortly. His office will be at Victoria.

C. E. A. CARR, formerly General Manager, Quebec Ry., Light and Power Co., and latterly General Manager, New Orleans Southern and Grand Isle Ry., New Orleans, La., has resigned the last mentioned position and with his family has been spending Christmas and New Year's in Toronto.

Electric Traction on two mountain divisions of the Denver & Rio Grande R.R. is to supplant steam according to published announcements. The first section will be 114 miles in the Wasatch mountains, between Salt Lake City and Helper, Utah. The second section will be in Colorado, over Tennessee pass, between Salida and Minturn, 87 miles. Other sections will be converted until the entire line is under electric traction.

Construction and Operation of Regina Municipal Railway.

Following are extracts from a report to the city council of Regina, Sask., by H. Doughty, Superintendent of the municipal electric railway, dealing with the 10 months ended with Oct. 31, 1912:—

Mr. Doughty says that reviewing the development and success achieved in this municipal undertaking since the commencement of 1912, one cannot but express faith and certain success of its operation in the future, comparing the past returns with its present day operation.

CONSTRUCTION.—The car barns were occupied and put into service Jan. 22. Various track intersections providing satisfactory and suitable entrances have since been installed. Machinery needed for repair and maintenance work has been added from time to time. Several necessary machines are now on order, and when they are delivered we shall be able to handle all that work required for our present and future rolling stock, and, further, such will enable us to build ourselves all cars wanted, excepting passenger cars. The facilities established to date give us storage room for 45 cars, of which 23 can be placed under cover.

The estimates provided for an expenditure of $200,000, of which $150,000 was covered by bylaw, the remainder consisting of a surplus out of 1911 bylaw and stock on hand.

Approximately there was built during 1912 four miles of single track, made up as follows:—1¼ miles single track concreted and 2¾ miles single track ballasted, comprising as follows:—

Single track concreted, 16th avenue, Scarth to Broad street (completion of south belt line).

Double track concreted, Broad street, 15th to 16th avenue; Albert street, 16th to McCallum avenues.

Single track ballasted, 5th avenue, Retallack to Garnet street; car barn tracks to connect with C.N.R. spur; Winnipeg street, Victoria avenue to the Arcola line; Dewdney, Elphinstone street to R.N.W.M.P. barracks.

The last two mentioned tracks are incomplete owing to the non-arrival of special intersections required for same. Shipment, however, has been made and such routes should be ready for operation by Dec. 1, 1912. When these are completed they cannot be operated until further rolling stock is at our disposal.

The straight tracks installed to date are so arranged as to give a 10 minute schedule on all routes operated on, or those that will be operated over until spring.

A temporary feed system was constructed prior to the Dominion exhibition in 1911. The construction of a permanent one is under way. It was found impossible to have a satisfactory one installed in the first instance, owing to the construction of Broad street subway and the pole lines in that vicinity then established being indefinite. The quality and standard of that work done in 1912 equals any portion of that laid during 1911. It is one of the best types known, and is so constructed as to give long life and low maintenance charges.

The present mileage of single track laid is 14½ miles. Out of the remaining bylaw covering the 1912 expenditure there is approximately an amount on hand unexpended against estimates of about $30,000, partly saved through work not undertaken and postponed when the 1913 proposals and estimates were prepared.

OPERATION.—The rolling stock on Jan. 1, 1912, consisted of 2 double truck cars and 4 single truck cars. Two single truck cars were added on April 15 and 4 more on June 30, making the total rolling stock 2 double truck cars, 10 single truck cars and 1 snow sweeper. Since Oct. 31 eight more double truck cars were ordered, four for Dec., 1912, and four for Jan., 1913, delivery. Orders have also been given for 8 double truck and 6 single truck cars for the spring.

Following is a comparative statement of operation for Oct., 1911, and Oct., 1912, respectively:—

	1911	1912
Average daily revenue .	$ 129.61	$ 379.45
Total revenue	3,369.80	10,190.75
Passengers carried without transfers	68,220	227,047
Car mileage	17,793	41,074

In Jan., 1912, we had a daily passenger traffic of 4,300 people, today we are carrying on an average about 10,000 people, while our daily revenue in Jan., 1912, was $200, compared with $425 at present.

The operation for the 10 months ended Oct. 31, 1912, shows a revenue of over $15,000 above operating expenses, and gives a passenger total (transfers included) of 1,829,599. Cars have operated over 296,500 miles.

The operating staff now consists of 75 people, with a daily payroll of $240.

The programme covering proposed extensions for 1913 is ready for submitting in the form of a bylaw to the citizens. It includes some 18½ miles single track, with cost of passenger cars, gravel and garbage cars, additions to car barns, spur tracks, etc., at an estimated cost of about $800,000. This expenditure comprises in detail the following proposals:—Track construction, $600,000; rolling stock, $175,000; miscellaneous, etc., $25,000. The proposed extensions, if completed and adequately provided with necessary rolling stock, should in 1913 show a clear net revenue of $50,000 after payment is made in full covering operating expenditure and fixed charges.

Electric Railway Finance, Meetings, Etc.

British Columbia Electric Ry.—Gross earnings for Sept., $559,486; operating expenses, $345,366; net operating earnings, $214,120; renewal funds, $51,620; net earnings, $162,500; approximate income from investments, $35,000; net income, $197,500; against $453,391 gross earnings; $282,443 operating expenses; $170,948 net operating earnings; $37,935 renewal funds; $133,013 net earnings; $25,000 approximate income from investments; $158,013 net income for Sept., 1911. Aggregate gross earnings for three months ended Sept. 30, $1,651,474; net earnings, $579,342, against $1,299,241 aggregate gross earnings; $441,138 net earnings for same period 1911.

During the ten months ended Oct. 31, the B.C.E. Ry. paid to the Vancouver city council $63,968 on percentage account. The amount for October was $887.46, during which period 4,218,766 passengers were carried.

Montreal Tramways Co.—The city treasurer of Montreal received from the company, Dec. 1, $409,510.14, the city's percentage on the gross earnings of the company within the city limits for the year ended Aug. 31, 1912. The Montreal Terminal Ry., owned by the M.T. Co., sent $1,491.55, percentage on earnings for the same period.

An issue of $890,000 first and refunding mortgage bonds at 5%, recently placed on the market by N. W. Harris and Co., Boston, Mass., in denominations of $500 and $1,000, was announced to have all been taken up, Dec. 16. The statement of earnings, etc., for 12 months ended Sept. 30, 1912, reported in connection with the issue, was:—Gross earnings, $6,047,351.36; operating expenses, including taxes, $4,067,866.61, net earnings, $1,979,484.75; annual interest charge on all underlying bonds outstanding, including the new issue, $765,650; balance, $1,213,834.75. The net earnings show over 2½ times the annual bond interest charge.

Toronto Ry., Toronto and York Radial Ry., and allied companies. Gross earnings for Sept., $767,944; operating expenses, maintenance, etc., $404,171; net earnings, $363,773, against $705,961 gross earnings; $309,706 operating expenses, maintenance, etc.; $396,255 net earnings, for Sept., 1911. Aggregate gross earnings for nine months ended Sept. 30, $6,221,043; net earnings, $3,185,100, against $5,559,647 aggregate gross earnings; $2,886,405 net earnings for same period 1911.

The city has received from the company $45,151.63, as percentage on the November gross receipts of $455,855.83 on the Toronto Ry., being an increase of $6,553.13 in percentage, and $46,731.51 in gross earnings, as compared with Nov., 1911.

Winnipeg Electric Ry.—Gross earnings for September, $309,722; operating expenses, $162,870; net earnings, $146,852, against $321,664 gross earnings; $146,140 operating expenses; $175,524 net earnings for Sept., 1911. Aggregate gross earnings for nine months ended Sept. 30, $2,737,552; net earnings, $1,280,748, against $2,825,637 aggregate gross earnings, $1,433,507 net earnings for same period 1911.

Electric Railway Track Laid in 1912.

Below is a table showing track laid on electric railways in Canada during 1912. The table is not published as a complete one, owing to the fact that some of the companies have not replied to the circular sent, but it is believed to be approximately correct. The feature of the returns for 1912, like that for 1911, is the extension of lines in the western provinces. The * mark indicates that the figures given are estimated.

	Miles.	Miles.
Brandon Municipal Ry.—		
*Extensions		3.00
British Columbia Electric Ry.—		
Various extensions:—		
Vancouver	5.32	
South Vancouver	2.11	
Point Grey	4.20	
New Westminster	9.28	
North Vancouver	0.50	
		21.41
Calgary Municipal Ry.—		
Various extensions		17.50
Edmonton Radial Ry.—		
Three extensions		2.49
Guelph Radial Ry.—		
York road to City Limits		0.60
Halifax Electric Tramway—		
One new extension		0.80
In addition a second track was laid on 3.50 miles of existing lines.		
International Transit Co.—		
Extension in Steelton, Ont.		0.41
Lethbridge Municipal Ry.—		
Lines in city		10.50
Levis County Ry.		
St Romuald to Garneau's Bridge, Que		1.50
Moncton Tramways Electricity and Gas Co.—		
Three lines in Moncton, N B		0.74
Niagara, Welland and Lake Erie Ry.—		
Line in Welland, Ont.		1.00
Nipissing Central Ry.		
Haileybury, Ont., to stop line	1.32	
Liskeard, Ont. to Wabis River	1.61	
		2.93
Oshawa Ry.—		
Line to brick yard, Oshawa, Ont.		1.50
Peterborough Radial Ry.—		
Extensions		0.75
Saskatoon Municipal Ry.—		
*New Lines		10.50
Toronto Eastern Ry.—		
Bowmanville, Ont.		0.36
Toronto Civic Lines—		
St Clair Ave Line	3.20	
Gerrard St. Line	1.85	
Danforth Ave. Line	1.12	
		6.17
Western Canada Power Line—		
Ruskin to Stave Falls, B.C.		6.00
Winnipeg Electric Ry.—		
*Various extensions		19.00
Total		107.16

Marine Department.

The Oil Engine Ship Christian X. for Trans-Atlantic Trade.

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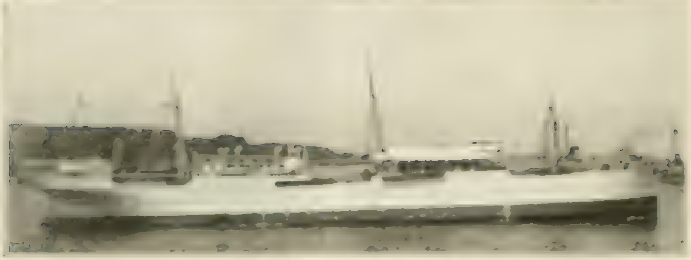

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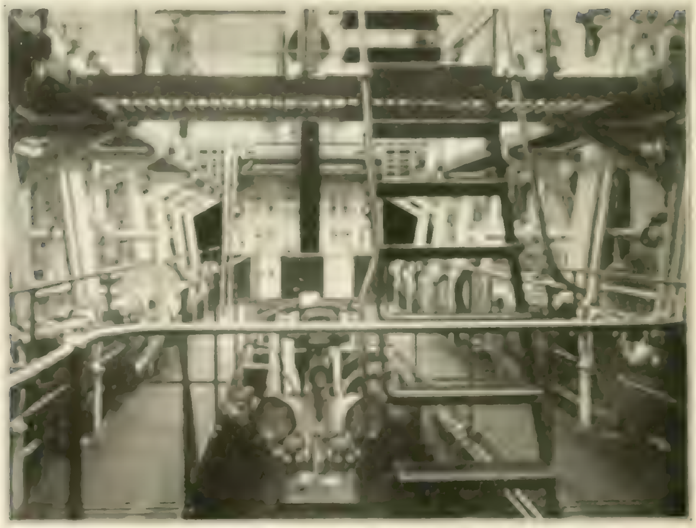

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Foundering of Steamboat Ceclilia L.

The following judgment re the foundering of the steamboat Cecilia L., in Lake St. Louis, Que., Nov. 1, was recently delivered by the Dominion Wreck Commissioner, Commander H. St. G. Lindsay, and concurred in by Capts. F. Nash and H. E. Webb, as assessors.

The loss was due to the fact that owing to the sudden shifting of the wind and the vessel being caught broadside on when struck, and owing to her upper works presenting such a large area of resistance and the cargo not being chocked and secured in a proper manner, and that the list taken by the vessel was so great that the cargo shifted suddenly and with such force that the side of the superstructure was carried away, causing the upper works to collapse, and the lower part of the vessel, the hull proper, to become filled with water and sink. The court feels deep sympathy with those who were bereaved, and points out that this vessel, as too often happens with vessels of her class, was built without due regard to stability, and recommends more careful supervision in this respect, and also that all passenger vessels carrying freight should be compelled by law to have their cargoes properly secured before leaving port, to avoid accident if the vessel lists or rolls. The opinion of the court is that no blame can be attached to anyone connected with the vessel, as she was loaded in the usual manner.

Canada Shipping Act Amendments.

The Minister of Marine introduced a bill into the House of Commons, Dec. 6, amending the Canada Shipping Act, regarding the conditions and methods of re-registering wrecked vessels after repair and naming and registering other vessels. The only actual change is to substitute the Minister of Marine for the Governor in Council as the authority in all such cases, with a view to dealing with these routine matters more expeditiously, and to relieve Council of similar matters of departmental administration.

The clause of the act relating to the Board of Steamboat Inspection is also to be amended, so that the Governor in Council may appoint any member of the board as chairman, and not necessarily an inspector, if it is in the public interest to do so.

Stranding of s.s. Bellona.

Following is the judgment rendered by the Dominion Wreck Commissioner, Commander H. St. G. Lindsay, and concurred in by Capt. F. Nash and Commander I. B. Miles, as assessors, re the stranding of the s.s. Bellona in the upper traverse of the St. Lawrence river, Oct. 31, whilst en route from Montreal to Aberdeen, Scotland, with a cargo of general produce.

The stranding was due to the erratic and incomprehensible behavior of the pilot, H. E. Larochelle, and in spite of the statement that he ordered the helm aport on the first occasion because he saw a small vessel which he was afraid of running down, it does not excuse his further action in porting a second time, and his certificate is therefore cancelled. The court also condemns the conduct of the master, J. Cunningham, for disregarding the safe navigation of his vessel in these narrow waters by staying below in his room, though he knew that the first mate had no experience in navigating the St. Lawrence, and his illness was not, according to his own statement, such as to disable him from attending to his duties as master. The court therefore suspends his certificate for three months, and also severely censures the first mate, C. Wischke, for neglect in not taking more interest in the navigation of his vessel by making himself conversant with the chart of the river and knowing the names and nature of the different lights to be passed during his watch. The court also criticizes the custom which appears to be too common in these waters, of the master practically giving over charge of the vessel to the pilot, and taking no further interest in the navigation of it.

New United States Lock at Sault Ste Marie.

Coincident with the construction of large permanent steel ore docks at Lake Superior shipping ports, capable of accommodating the mammoth carriers recently built, provision is being made to facilitate the passage of such vessels through the United States channel at Sault Ste. Marie, where the existing locks are proving inadequate to the service. The principal work now in progress is the building of the new Davis lock, which was begun in March, 1907, and will not be completed until 1916. Next to the Panama canal this is the most important aid to navigation now being carried out by the U.S. government; and it is due entirely to shipments of ore from Lake Superior ports.

The total length of the lock will be 1,715 ft. and its width 80 ft., 1,350 ft. being within the inner gates. Six culverts are provided for; 1,200 ft. of the wall is 50 ft. high and 26 ft. wide at the base. It is to be built up from bed rock in sections, alternate sections being constructed first and the intermediate sections later. They are 25 to 35 ft. in length. The concrete of the lock floors will be 1½ ft. thick. The work also includes lining about 325 linear ft. of tunnel rock, and the building of about 170 linear ft. of tunnel in trench, in addition to the tunnels and passages through the masonry.

The unusual dimensions of the lock are made necessary, both by the ever increasing traffic on the lakes, and by improvements that have been found necessary in the operation of the two present locks. The new length will not only be utilized in handling longer boats, but it will also make possible the entry of two of the longer craft in tandem style, a practice never yet indulged in. At present the two or more boats often passing the locks together are locked through abreast of each other. Vessel owners and masters declare this is a dangerous proceeding. The boats, they say, not only require more time to take their positions in the locks in this way, but also that there is great danger from suction to the boat remaining in the lock when the first one steams away. On more than one occasion lines have snapped and boats have drifted temporarily in a helpless manner in the locks.

The present largest lock, the Poe, is 100 ft. wide. The new one will measure but 80 ft., making it impossible to lock vessels through in any other way than tandem.

Probably the most distinctive feature of the new lock will be its depth. When opened for navigation it will present a loading depth of 24½ ft., or 6½ ft. more than the present depth accorded the boats of the great lakes. While all channels on the lakes are now dredged to a depth of but 21 ft., experts declare it will prove of less expense to dredge the channels deeper than to construct or remodel other locks.

The practical value of the depth presented by the present locks, an average of 18 ft., is displayed in the trouble the larger boats experience in locking through. Unnecessary delay is also experienced by masters by the upheaval of water at the bow of the boat. Such conditions, engineers say, are due to the excess of water caused by the entrance of the boat to the lock being unable to escape fast enough at the sides of the boat. With the additional depth presented by the new lock, this water, it is figured, will be forced under the boat to the escaping channels beneath the flooring. With such facilities at hand vessels will be able to lock through in less than half an hour, while it now takes many of the larger ones over an hour.

The importance of the work being done by the U.S. government on the new locks and canal may be seen from the fact that the present locks already float the greatest commerce of any inland waters of the globe. In 1911 the total tonnage amounted to 62,000,218, which is two and one-half times greater than that passing through the Suez canal, and seven times greater than that of the Kiel canal. What the traffic will amount to with the addition of another lock, the greatest yet constructed, remains to be seen.

It is said the present commerce exceeds that borne by all ships, British and foreign, entering the ports of Great Britain in one year, and valued at an average of $654,010,844 annually. When completed the new lock will not only be by far the largest in the world, but will represent an expenditure of about $9,000,000.

United States Wireless Telegraph Law.

The new wireless telgraphy laws, enacted by the U.S. Congress, affecting probably over 1,000 vessels, went into effect on Dec. 13. Government licenses are now required for all shore stations and for steamer equipments leaving U.S. ports, and operators have to be licensed.

Every steamboat with a carrying capacity of 50 passengers or more, on trips exceeding 200 miles, is required to have two operators for its wireless equipment so that a continuous watch can be maintained for distress signals. Safeguards are required to provide against any delay or interruption of the communication between the operating room and the bridge on each boat, and auxiliary machinery for continuing wireless communication in case of accident to the regular equipment, is also required.

These laws were framed shortly after the Titanic disaster and one of the provisions included is for giving the right of way to distress signals. The wording of this section is as follows:—"All stations are required to give absolute priority to signals and radiograms relating to ships in distress; to cease all sending on hearing a distress signal, and except when engaged in answering or aiding the ship in distress, to refrain from sending until all signals relating to the distress call are completed."

The use for commercial messages, of the naval stations on the South Atlantic and the Pacific coasts, and of the army stations in Alaska, where there are no commercial stations, has been authorized by these new regulations.

The Consolidated Elevator Co. is reported to have purchased from the C.P.R. 400 ft. of water frontage immediately east of the present site of the Consolidated elevator on the Kaministikwia river at West Fort William, Ont., on which it will construct a terminal elevator with a storage capacity of 2,000,000 bush.

Stranding of s.s. Royal George.

Full details of the stranding of the Canadian Northern Steamships' s.s. Royal George on the Island of Orleans, near Quebec, Nov. 6, were given in the last issue of Canadian Railway and Marine World. The investigation into the causes of the accident was held at Quebec, Dec. 3 to 5, before the Dominion Wreck Commissioner, Commander H. St. G. Lindsay, with Commander I. B. Miles and Capt. F. Nash as nautical assessors. Following is the judgment, which was delivered in Montreal, Dec. 11:—

The s.s. Royal George arrived at Father Point early on Nov. 6, and was there boarded by a licensed pilot, S. Rioux, and proceeded on her voyage towards Montreal, via Quebec. Everything appears to have gone well on the run up as far as Gross Isle, some slight fog or mist being encountered on the way. After arrival at quarantine, where she stopped, and after receiving clearance from the authorities, she proceeded at full speed towards Quebec, steering the usual course, leaving her position off the quarantine station at about 4.10 p.m., by the ship's time, which had been set to standard time at Father Point that morning, the weather at the time, according to the evidence, being cloudy and overcast.

At 4.50 p.m., she passed St. Jean light, which appears to have been plainly visible, although some doubt exists as to the actual distance it was off when abeam, and about this time the course was altered, and the vessel headed so as to pass St. Laurent light, which is six miles above the former light, but was not visible at that time, although it can be seen in clear weather at a distance of 11 miles. From the passing of St. Jean until just prior to the stranding, no lights nor landmarks were seen, and the speed, which was about 17 knots, remained unchanged, as the pilot states he was quite satisfied as to his course and position, as he could see the loom of the land on both sides of the channel. Shortly before the stranding a light was seen and reported about half a point on the starboard bow, and was, on account of its peculiarity, viz.: having the appearance of an occulting light, assumed by the pilot to be the Beaumont shoal light, which is situated on the south side of the river nearly opposite St. Laurent light. The pilot states he immediately ordered the helm to port, but directly that order had been carried out he discovered that the land was very close on the starboard side, and he states he at once ordered the helm hard astarboard, and that the vessel ran aground heading about west by south half south, this being, according to the evidence, the course she was steering when the light was sighted. Several attempts were made to release her by using the engines and by towing; but without avail, until the seventeenth day, when she was taken off in a damaged condition, by the salvage company.

The court, after carefully considering the evidence which as to some matters is of a contradictory nature, is of opinion that the actual causes of the stranding were due to overconfidence on the part of the pilot as to his position, and his reckless navigation in regard to speed. It does not consider that he showed the necessary prudence and caution in running to within 1½ miles of St. Laurent light at full speed, without seeing it or any other aid to navigation. For the pilot to suppose that the first light he picked up, which was half a point on the starboard bow, was the occulting buoy on Beaumont shoal, which should under ordinary circumstances have shown well out on the port bow, shows that he had a very indefinite idea as to the vessels' position at the time. The court is also quite satisfied that the weather conditions experienced after leaving St. Jean light, were not of such a nature as to justify the vessel being run at full speed, and therefore suspends his license for three years.

The court is of opinion that the master, J. Harrison, was not justified in being below and off the bridge under the conditions prevailing between leaving quarantine and the stranding, and it is unanimous in the opinion that had he been on the bridge in charge, the accident might have been avoided, and therefore suspends his certificate for 12 months.

The court also severely criticises the lack of initiative shown by the chief officer, T. S. Edwards, in not at once either calling the master when the lights on the St. Laurent pier and the buoy on Beaumont shoal were not sighted, when they should have been, knowing, as he did, that the sighting of these lights was necessary for the safe navigation of the vessel, or for not suggesting to the pilot the advisability of reducing the speed of the vessel until her position could be verified, and therefore suspends his certificate for three months.

The s.s. Royal George sailed from Quebec, Dec. 12, for Halifax, N.S., in charge of Capt. F. J. Thompson, the company's marine superintendent.

Capt. Harrison, prior to sailing for England, announced his intention of appealing to the British Board of Trade against the decision, as he claimed to be in no way responsible for the disaster.

Shipbuilders along the lakes are being asked for prices for lengthening the Inland Lines steamboat Empress of Midland, by 72 ft.

Following on the representations made to the Government by A. Allan, President, and T. Robb, Manager and Secretary, Shipping Federation of Canada, notice of a resolution was given in the House of Commons, Dec. 18, calling for the appointment of a special committee to investigate and report on the whole system of pilotage on the St. Lawrence, including the aids to navigation on the St. Lawrence route and the Great Lakes.

List of Steam Vessels Registered in Canada during November, 1912.

No.	Name	Port of Registry	When and Where Built	Length	Breadth	Depth	Gross Tons	Reg. Tons	Engines, Etc.	Owner or Managing Owner
1311[illegible]	Associate	Lunenburg, N.S.	Liverpool, N.S., 1912	107 6	26 0	10 8	135	90	3 n.h.p. sc.	J. Backman, M.O., Riverport, N.S.
13370[illegible]	B. and R.	Vancouver, B.C.	Vancouver, B.C., 1912	30 2	9 3	3 1	10	7	1 " "	R. M. Wilson, Vancouver, B.C.
1310[illegible]	Barbara K	St. John, N.B.	Wilsons Beach, N.B., 1908	28 2	8 0	5 3	8	5	[illegible] " "	J. K. Kelley, St. John, N.B.
131131	Calumet Island	Ottawa	Calumet Island, Que., 1909	42 0	18 0	3 0	18	12	1 " pa	F. Ladouceur, Calumet Island, Que.
131195	Casarco No. 7	St. Andrews, N.B.	Little River, N.S., 1912	45 2	12 4	5 7	15	10	2 " sc	Canadian Sardine Co., St. Andrews, N.B.
131196	Casarco No. 10	"	Lunenburg, N.S., 1912	50 0	12 7	5 5	15	12	2 " "	" " " "
130[illegible]	Dorothy May	St. Catharines, Ont.	Port Dalhousie, Ont., 1912	53 1	15 0	9 1	55	29	19 " "	W. Hand, Port Dalhousie, Ont.
130239	East Side	Port Stanley, Ont.	Collingwood, Ont., 1912	76 6	16 6	6 9	50	31	13 " "	C. Thorn, et al., J.O., Port Stanley, Ont.
130344	[illegible]	Charlottetown, P.E.I.	Belle River, P.E.I., 1912	55 4	15 4	5 8	35	24	1 " "	D. J. Riley, Belle River, P.E.I.
1311[illegible]	L. O. B. Co.	Ottawa	Duck Island, Ont., 1912	42 6	9 7	5 2	19	11	2¹ " "	Lower Ottawa Boom Co., Ottawa, Ont.
131087	[illegible]	Toronto	Moon Falls, Ont., 1911	63 0	10 0	3 2	22	15	3 " "	H. Arnold, Muskoka, Ont.
130240	Stanley Foster	Port Stanley, Ont.	Port Stanley, Ont., 1912	77 9	15 6	7 3	56	38	6 " "	N. S. Cornell, Port Stanley, Ont.
133707	Sutil	Vancouver, B.C.	Hong Kong, China, 1912	45 0	11 3	7 3	21	14	2 " "	M. Enke, Victoria, B.C.
133710	[illegible]		1912	60 0	13 0	5 6	44	30	2½ " "	J. B. Wood, Vancouver, B.C.

List of Sailing Vessels and Barges Registered in Canada during November, 1912.

No.	Name	Port of Registry	Rig	When and Where Built	Length	Breadth	Depth	Reg. Tons	Owner or Managing Owner
130658	Abutilon	Chatham, N.B.	Schr.	Caraquet, N.B., 1912	37 5	14 4	6 0	19	J. Lacroix, Caraquet, N.B.
1311[illegible]	[illegible]	Lunenburg, N.S.		Lunenburg, N.S., 1912	106 8	26 3	10 4	95	T. Creaser, M.O., Riverport, N.S.
133709	C. W. 6	Vancouver, B.C.	Scow	Vancouver, B.C., 1912	69 2	32 1	7 5	171	W. W. White, Vancouver, B.C.
131164	Carrie M. Wamback	Lunenburg, N.S.	Schr.	Liverpool, N.S., 1912	113 7	26 1	10 6	109	W. Duff, M.O., Lunenburg, N.S.
1311[illegible]	Duke of Connaught	Montreal	Float. dry dock	Barrow, Eng., 1912	600 6	135 2	16 8	18011	Canadian Vickers, Ltd., Montreal
13099	Hoy	Chatham, N.B.	Schr.	Point Spain, N.B., 1906	32 0	10 6	5 0	11	A. F. Morrison, Shippegan, N.B.
131006	Janet	St. John, N.B.	Yawl	South Boston, Mass., 1903	41 7	12 0	5 4	15	A. H. Likely, St. John, N.B.
130991	Joseph Marie G.	Chatham, N.B.	Schr.	Little Lameque, N.B., 1912	39 0	14 7	6 3	22	C. Gauvin, Little Lameque, N.B.
130899	Nidge No. 1	Victoria, B.C.	Barge	Victoria, B.C., 1912	60 0	20 0	4 7	46	Vancouver Island Power Co., Victoria, B.C.
[illegible]	[illegible]	Canso, N.S.	Schr.	Tancook, N.S., 1912	56 2	14 7	7 4	33	F. C. Lohnes, M.O., Canso, N.S.
[illegible]	[illegible] No. 1	Victoria, B.C.	Barge	Victoria, B.C., 1912	90 0	32 0	8 0	183	Victoria Tug Co., Victoria, B.C.
[illegible]	[illegible] No. 2			1912	90 0	32 0	8 0	183	" " "
[illegible]	[illegible] No. 6			1910	98 0	32 0	8 0	204	" " "
[illegible]	[illegible] No. 7			1910	98 0	32 0	8 0	204	" " "
[illegible]	[illegible] No. 8			1911	92 0	32 0	8 0	183	" " "
[illegible]	[illegible] No. 9			1911	90 0	32 0	8 0	183	" " "
130500	W. M. R. No. 2	New Westminster, B.C.		New Westminster, B.C., 1911	85 0	27 0	7 3	153	Mrs. A. M. Garnett, Victoria, B.C.
130861	W. M. R. No. 3			" 1910	87 0	30 0	8 7	196	" " "

Storage of Grain in Foreign Vessels at the Dual Ports.

It was announced from Ottawa, Nov. 27, that arrangements had been made by which U.S. vessels presenting themselves at Port Arthur and Fort William, after Dec. 5, when the lake insurance expired, would be permitted to load grain, and remain at these ports until the re-opening of navigation, when they could deliver their cargoes at Point Edward, Goderich or Georgian Bay ports. The Government elevator at Port Colborne is not included in the permission.

When the matter was under consideration in Ottawa, A. A. Wright, L. Henderson, H. W. Richardson and Francis King, Counsel, of the Dominion Marine Association, placed the Association's views before the Minister of Customs, who was acting for the Minister of Trade and Commerce.

While not being definitely authorized to pledge the Association to any particular policy in the matter, they claimed to represent fairly the views of Canadian vessel owners. They particularly pointed out that there was no lack of Canadian tonnage to make use of the full loading capacity of the elevators at the dual ports, between that date and the close of navigation, and were prepared to protest vigorously against the introduction of U.S. tonnage at that stage, believing it would be extremely unjust to the Canadians engaged in the trade to crowd the loading ports beyond the limit and run the risk of even greater congestion at the Georgian Bay ports and on Lake Huron.

After some discussion a great part of the opposition was removed, when it was agreed that Canadian vessels will enjoy the benefits of the coasting laws during the season of navigation, and that U.S. tonnage ought only to be let in for storage purposes after the extended season closed. It was then stated that there would probably be no objection to permitting U.S. tonnage to be loaded at the ports named after Dec. 10, with the option of discharging cargoes in the spring at Georgian Bay ports, or at Goderich or Point Edward. It was considered only fair that Port Colborne be reserved for Canadian vessels, and it was pointed out that Canadian vessel owners were accepting the risk of considerable delay at unloading ports on the first trip on the re-opening of navigation, and the Government was called upon to see that there will be no congestion at the lower ports by reason of any lack of cars to keep the elevators clear.

Vessels Removed From the Register.

The following vessels were removed from the register during Nov., 1912, for the reasons assigned:—

STEAM.—Grilse, Lunenburg, N.S., 81 tons, sold to foreigners; Wm. Bonfield, St. Catharines, Ont., 13 tons, burnt; Winnitoba, Winnipeg, Man., 556 tons, burnt.

SAILING.—April, Vancouver, B.C., 96 tons, broken up; Archie Crowell, Shelburne, N.S., 175 tons, transferred to Demerara; C.W. 3, Vancouver, B.C., 86 tons, broken up; H.B., Prescott, Ont., 541 tons, lost; James Buckley, Prescott, Ont., 442 tons, lost; July, Vancouver, B.C., 95 tons, broken up; June, Vancouver, B.C., 79 tons, broken up; May, Vancouver, B.C., 46 tons, broken up; P. J. McLaughlin, Parrsboro, N.S., 147 tons, transferred to Bahamas; Sceptre, Lunenburg, N.S., 100 tons, wrecked; Yuba, Barrington, N.S., 6 tons, broken up.

Painters should not wash their hands in turpentine. Use horsehair with a little coal oil, and then finish with soap and water.

Compulsory Use of Radiotelegraphy on Vessels.

The Minister of Marine introduced a bill into the House of Commons, Dec. 6, under the name of the Radiotelegraph Act, providing that no person shall establish any radiotelegraph station or apparatus in Canada, or on board any vessel registered in Canada, except under license granted by the Minister of the Naval Service; also that after July 1, no passenger steamer, whether registered in Canada or not, carrying 50 or more persons, including passengers and crew, shall leave, or attempt to leave, any Canadian port, unless it is equipped with an efficient radiotelegraph apparatus in good working order, capable of transmitting and receiving messages over a distance of at least 100 miles by night and day, and in charge of a fully qualified person. The penalty for infringement of these provisions, on summary conviction, is a fine not exceeding $1,000 and costs, which shall constitute a lien on any such vessel. An exception to this section is made in the case of passenger vessels plying between ports not more than 200 miles apart.

Other clauses cover provisions for the transmission of messages by land companies, qualifications of operators, declaration of secrecy, penalties for sending false messages, search for stations illegally established, etc.

Canadian Notices to Mariners.

The Department of Marine has issued the following:—

298. Nov. 20. Nova Scotia, south coast, Port Felix harbor, Sampson rock, buoy established.

299. Nov. 20. Newfoundland, south coast, Lamalin harbor, range lights established, buoys established.

300. Nov. 20. North Atlantic ocean, Bermuda, northern reefs, North rock, light established, northeast breakers, submarine bell buoy established.

301. Nov. 22. New Brunswick, south coast, Bay of Fundy, approach to St. John, Black point, gas and whistling buoy to be moored northward of its station during May, June and July of each year.

302. Nov. 22. Quebec, River St. Lawrence, Saguenay river entrance, Tadousac, storm signal station established.

303. Nov. 27. Nova Scotia, west coast, St. Mary bay, off Meteghan, bell buoy established.

304. Nov. 27. New Brunswick, Chaleur bay, Petit Rocher, light carried away by storm, temporary light.

305. Nov. 27. Labrador, Belle ile strait, Red bay, Saddle island, change in character of light.

306. Nov. 27. Quebec, Ottawa river, chart of western portion of Lake of Two Mountains issued.

307. Nov. 27. Ontario, Lake Ontario, off mouth of Niagara river, position of gas and bell buoy, correction.

308. Nov. 27. Ontario, Detroit river, Livingstone channel, change in position of gas buoy, lighted buoy discontinued.

309. Nov. 27. British Columbia, Strait of Georgia, Burrard inlet, Atkinson point, new lighthouse, change in character of light.

310. Nov. 27. Alaska, Dixon entrance, Lord rock, light to be established.

311. Nov. 27. Japan, Kitami province, fog siren established at Soya-misaki lighthouse.

312. Dec. 2. Prince Edward Island, list of buoys replaced for winter by spar buoys.

313. Dec. 2. Quebec, Chaleur bay, St. Godfroy, hand fog horn at light station.

314. Dec. 2. Quebec, Chaleur bay, Ste. Adelaide de Pabos, light increased in height.

315. Dec. 2. Quebec, River St. Lawrence, chart, Bic island to White island, issued.

316. Dec. 2. Ontario, Georgian bay, Vic-Churchill issued.

317. Dec. 2. Quebec, Ottawa river, Pointe au Chene, buoys established.

318. Dec. 2. Ontario, Georgian bay, Victoria harbor, Port McNicoll, gas buoy placed.

Atlantic and Pacific Ocean Marine.

The Canadian Northern Steamship Co.'s liner Royal Edward is being overhauled, and is scheduled to sail again from Bristol, Jan. 8.

Four firemen engaged on the s.s. Royal George, were sentenced to four weeks imprisonment, at Quebec, Dec. 7, for refusing to do duty on the vessel.

British press reports state that with the opening of the 1913 season of navigation to Montreal, a new line will start sailings from Bristol, Eng., to Canadian ports.

Capt. Bertham has been appointed to the command of the C.P.R. steamship Empress of Russia, and will be succeeded on the Empress of India by Capt. Harley, heretofore chief officer.

The C.P.R. s.s. Empress of Japan, which recently arrived at Vancouver, from the Orient, carried a cargo of silk valued at ment, requiring 15 cars to transport it across the continent.

The Canada-Australia Line has decided to order another steamship, similar in size and power to the Niagara. It is reported that it is intended to equip the new vessel with internal combustion engines of the polar-Diesel type.

The Norwegian steamships Borgestad and Fritzoe, which were built expressly for the Sydney-Montreal coal trade, have been turned into oil tankers, and will be in future used in the crude oil trade, running between Mexican ports and Baltimore, Md.

Capt. Tait, Vancouver, has been appointed master, and W. H. Partington, formerly of the Princess Charlotte, chief officer of the steamship Kestrel, recently sold by the Dominion Government. The Kestrel left Victoria recently for Fanning island, for trading among the Pacific islands.

The Head Line steamship Bray Head sailed from Montreal for Maryport, Belfast and Dublin, Dec. 3. This was the last vessel to leave Montreal this season, and it is a coincidence that the Bray Head was the last vessel to leave Montreal for the 1911 season, the day and time of sailing being the same in each year.

It is announced that the C.P.R. has increased the pay of its officers on cargo boats, the new rates being, chief officer, £16 a month, rising to £17 after the first year; second officer, £12, rising to £13 after the first year; third officer, £11, rising to £12 after the first year, being an average increase of £2 a month.

Regarding the use of the Panama canal by C.P.R. vessels, G. M. Bosworth, Vice President, C.P.R., is reported to have said, Dec. 16, that there is no necessity for his company to operate through the canal. The company's Atlantic and Pacific steamship lines are working as assistants to the transcontinental railway, and if their routes were changed to a direct service through the canal the railway might be affected.

During the hearing of the case of the United States government against parties to the North Atlantic Conference, Dec. 2, Robert Kerr, former Passenger Traffic Manager, C.P.R., stated in evidence that his company received 5.42% of the passenger traffic from Antwerp to Canada and the U.S. He also stated that the gross income of the company's marine department for last year was $5,234,760, and the net profit was $711,842. An average of 4% was marked off for depreciation of equipment.

G. M. Bosworth, Vice President, C.P.R., on his return from Great Britain recently, is reported to have stated that orders will shortly be placed in Glasgow, Scotland, for two vessels for the Atlantic service, of the same cruiser type as those now nearing completion for the Pacific service. They will be combination passenger and freight vessels, 520 ft. long over all, 12,000 tons, with accommodation for 530 second class and 1,230 third class passengers. They will be built for a speed of 16 knots, and will make their maiden trips in June and July, 1914.

The C.P.R. s.s. Empress of Asia was launched at Govan, Scotland, Nov. 23, being christened by Mrs. Bosworth, wife of the Vice President. The sister vessel, Empress of Russia, which was launched about four months ago, will sail for British Columbia, by way of the Suez canal and the Orient, in the spring, with a special party, who will return to England via Canada and the C.P.R. Atlantic steamship line, thus completing a tour of the world, entirely by the C.P.R. Full description of these vessels was given in Canadian Railway and Marine World of Oct., 1912.

Maritime Provinces and Newfoundland.

Plans are reported to have been prepared for the building of a marine railway at Chatham, N.B.

The coal carrying steamboat Morien was reported overdue at Placentia, Nfld., from Louisburg, N.S., Nov. 22, and although search vessels were sent out, no news has been heard of her.

The building of the new vessels at Newcastle, Eng., for the Reid Newfoundland Co. has been retarded by labor troubles. It is expected, however, that the vessel for the Cabot strait route will be delivered at an early date.

The charter of the Imperial Drydock Co., St. John, N.B., is reported to have been acquired by the Norton-Griffiths Co. Application is being made to the Dominion Government for a subsidy contract for the building of a dock 1,150 ft. long.

The Reid Newfoundland Co's. s.s. Lintrose, under construction at Newcastle, Eng., will be launched about Jan. 6. It is anticipated that she will make her first trip to North Sydney, N.S., by the end of February, or early in March.

During the season of 1912 the Dominion Coal Co. had in its service 32 vessels of a combined capacity of 180,000 tons. Twenty-five of these were engaged in the Sydney-Montreal trade, and in their several voyages carried 1,600,000 tons of coal, about 400,000 tons in excess of that carried in 1911.

The Suburban Steamship Co. is applying for incorporation in New Brunswick, with a capital of $9,980 and office at Browns Flats, Kings county, to own and operate steam and other vessels, and carry on a passenger, freight and mail transportation business. C. C. Taylor, Sheffield, and W. I. Barton and L. T. Nase, St. John, N.B., are the provisional directors.

The Newfoundland Produce Co. has bought the freight and passenger steamship Sagona, and will put her on a route serving the west and south coast of the island, St. Pierre, Miquelon, Sydney and Halifax, N.S. The Sagona was built in Dundee, Scotland, 1912, and has been engaged in the mail service on the Labrador coast. She flies the French flag, and has accommodation for 60 passengers. Capt. de Lisle is master, with Capt. Marshall as navigating officer.

The Canada Atlantic and Plant Steamship Company's annual meeting was held at Halifax, N.S., recently. The following are the officers, directors, etc., for the current year:—President, A. W. Perry, Boston, Mass.; Vice President, McC. Grant, Halifax, N.S.; Treasurer, H. G. Perry, Boston. Other directors, H. McInnes; W. Mitchell, Halifax; Secretary and Eastern Manager, H. L. Chipman, Halifax; Auditor, W. D. Farnham. The new steamship Evangeline was formally accepted by the shareholders.

Province of Quebec Marine.

The Dominion Government is arranging for the operation of a semi-monthly steamship service between Quebec and St. Johns, Nfld.

It is said that the Richelieu and Ontario Navigation Co. is arranging for the purchase of some additional steamships, as well as for the building of several others.

The Montreal floating drydock, Duke of Connaught, was given a test Dec. 4, when the tug, Sir Hugh Allan, was docked. The test was reported to be highly successful.

The Allan wharf at Quebec is to be enlarged during the winter in preparation for the coming of the new steamships which are to be put on the trans-Atlantic run in the spring.

The Dominion Government steamboat Bellechasse made 12½ knots an hour on her trial trip near Kingston, Ont., Nov. 29. She left Kingston Nov. 30 to be fitted out for survey and inspection work on the St. Lawrence below Quebec.

During the season of navigation ended Dec. 3, 1912, the number of seagoing vessels entering the port of Montreal was 736, having a gross capacity of 2,403,934 tons, against 762 vessels of 2,378,252 tons in the season of 1911.

The Montreal Harbor Commissioners took formal leave of the staff, Dec. 9, presenting each of the department heads with a loving cup. The staff presented a walking stick to the retiring Chairman, G. W. Stephens, who subsequently sailed for Europe.

The steamboat Chateauguay, heretofore plying between Montreal and Beauharnois, Que., sank at her wharf at the latter place recently. She had not been in service for nearly two years, and was recently sold at auction to P. Parent, Verdun, Que., for $6,000.

The revenue for the season of navigation just closed, for the Montreal harbor, was $461,396.43, against $430,623.24 for 1911. The increases were, wharfage, inward, $6,000; warfage, outward, $5,500; from local traffic, $19,273.19. There was a decrease in the number of seagoing vessels arriving, there being 736, against 762 in 1911; the tonnage, however, being 2,403,924, against 2,338,252 for 1911.

Preliminary work will be gone on with during the winter upon the harbor improvements at Quebec. Tenants of warehouse properties along the riverfront, from the west end of the Custom House to St. James street, are moving, and these warehouses will be demolished at once. This will allow of the building of the new freight sheds, and the laying of tracks over the wharves to the foot of St. James street to connect with the Levis car ferry service.

Ontario and the Great Lakes.

The Department of Public Works received tenders, to Dec. 30, 1912, for the construction of a wharf or retaining wall, at Hamilton.

The new dock built by the Dominion Government at Amherstburg, Ont., is reported completed. It is 300 ft. by 75 ft., and is built of cement, reinforced by steel bars.

A cargo of sulphur on board the steamship C. A. Jaques began to burn, owing to atmospheric conditions, while the vessel was being unloaded at Port Arthur, Nov. 28. About $8,000 of damage was done to the cargo before the fire was got under.

The following steamboats, etc., have recently been sold on the Trent valley canal at Peterborough, Ont.:—Steamboat Monarch, to G. C. Wainwright; steamboat Water Lily, to G. W. Hatton; barges, Sultan and Davis, to D. Conroy.

Arrangements were made at Port Arthur and Fort William, Ont., recently under which a large number of vessels will lay up there for the winter. These vessels are being loaded with grain, so as to leave as much space as possible in the elevators, and will be ready to leave for eastern ports as soon as there is open water in the spring.

At the inquiry into the recent loss of the steamboat Mayflower on the Madawaska river, when nine persons were drowned, it transpired that the Inspector of Hulls and Equipment had given permission for her use as a tug, and to carry freight, and had prohibited the carrying of passengers until a licensed captain was secured.

The U.S. Lake Survey reports the levels of the Great Lakes in feet above tidewater for November, as follows:—Superior, 602.38; Michigan and Huron, 580.43; Erie, 571.90; Ontario, 246.08. As compared with the average November levels of the past ten years, Superior was 0.22 ft. below; Michigan and Huron, 0.08 ft. above; Erie, 0.07 ft. above, and Ontario, 0.51 ft. above. It was anticipated that there would be an average fall of 0.2 ft. during December, except in Erie, where the anticipated fall was 0.1 ft.

Manitoba, Saskatchewan and Alberta.

Lieut.-Colonel Potter, chief of the United States Government engineers for the Northwest, began an investigation at Grand Forks, N.D., Dec. 5, as to the possibility of improving the navigation of the Red river to such an extent that it may be possible to establish a trade route to Hudson bay.

The Minister of Public Works has announced that there will be included in the estimates to be submitted to the Dominion Parliament an amount for the proposed canals to connect Lakes Winnipeg and Manitoba, and also the last named lake with the Saskatchewan river, also for canals to connect Lake Manitoba with Lake Winnipeg via the Waterhen river, Lake St. Martin and the Dauphin river, with continuous navigation on these rivers.

There is under construction at the Polson Iron Works, Toronto, a steamboat for missionary work in the Arctic ocean. The vessel is 40 ft. long, with a breadth 9¼ ft. broad and 3½ ft. deep. She draws 18 ins. of water, and will be propelled by a 26 in. screw, which will operate in a tunnel in the stern, extending 10 ins. above the water level. The action of the screw will draw the tunnel full of water, so that the full power will be obtained, as if a screw was fully submerged. Power will be supplied by a Clyde boiler, 42 by 52 ins. This is the first vessel of this type built in Canada.

She will be shipped in 20 sections to Athabaska Landing, Alta., then transhipped overland to the Mackenzie river, where she will be put together.

British Columbia and Pacific Coast Marine.

The steamship Lonsdale, which has been running in the Vancouver-Mexico trade, has been sold to the Japanese. She left Vancouver for Japan early in December.

The Venture, owned by the Union Steamship Co., has been put on the ways at North Vancouver, B.C., for an overhaul, and the enlargements of her oil tanks.

The British Columbia Fisheries Co.'s steam trawlers, Canada and Triumph, arrived at Prince Rupert, B.C., Nov. 23, from Grimsby, Eng., a trip of 16,000 miles.

North Vancouver taxpayers will vote on a bylaw to repurchase the old ferry debentures amounting to $128,000 at an advance of 5%, and for the building of a new ferry steamer.

The British Columbia Government is considering tenders for the operation of a ferry service on the Fraser river between New Westminster, Port Mann, Annacis island and Coquitlam.

Tenders are under consideration for the first section of the proposed extensive harbor works at New Westminster, B.C. It is expected that about $500,000 will be expended under the contract.

The Union Steamship Co. announces the sale of the salved steamship Vadso, now lying at North Vancouver, B.C. The survey showed that 80 plates would have to be removed, but that other damage had been done by the stranding.

The G.T. Pacific Ry. tug recently completed a towing trip of 2000 miles. She took on tow three vessels carrying lumber from Vancouver, dropping one at Prince Rupert, and taking the others on to Granby bay, whence she took two of them back to Vancouver.

The West Vancouver Ferry Co. is inviting tenders for the building of two twin screw steamboats, each having the following dimensions: -Length, 95 ft.; breadth, 18 ft.; depth, 9 ft.; to be fitted with triple expansion, surface condensing engines, and water tube boilers. T. F. Merrick is Secretary.

The Victoria and Westminster Trading Co.'s steamboat Burlin broke down on a recent trip from Victoria to New Westminster, B.C., and after drifting about for three days, with all the blades of her propeller gone, and her machinery disabled, ran ashore on the Sandheads, Nov. 28. She was subsequently towed to New Westminster for repairs.

Telegraph, Telephone and Cable Matters.

The Canadian Northern Telegraph Co. has opened an office at Mafeking, Man., and has closed its office at Birch River, Man.

The United States Government has completed the installation of a chain of wireless telegraph stations along the Alaskan coast.

The Board of Railway Commissioners [illegible] to [illegible] the C.P.R. may file the tariff of telegraph tolls to apply west of Sudbury, Ont.

The Dominion Government has opened a 60 mile branch telegraph line from Fort Fraser to Stuart lake, B.C. The rate from Fort George to Stuart lake is 75 cents for 10 words and five cents for each additional word.

The C.P.R. Telegraph department has opened a branch office in the new C.P.R. building at Main street subway, Winnipeg, to serve the northern section of the city. It is also opening a down town office in the Stringer Building, Calgary, Alta.

The Dominion Parliament is being asked by the Minister of Marine to pass an act providing for the compulsory installation and inspection of radio-telegraph apparatus on certain vessels. Full particulars are given in the Marine Department on another page.

The Hudson's Bay Co. is reported to have made arrangements by which the trading post at Fort George, B.C., and the posts subordinate to it, will, in future be supplied over the G.T. Pacific Ry. Heretofore Fort George has been supplied by freight hauled over the old Caribou Road for 187 miles, and thence by a steamboat route of 150 miles.

The various C.P.R. offices in the eastern wing of the Vancouver station have been moved, preparatory to demolishing the building in preparation for the erection of the new station. The executive department has been moved to the Vancouver block, the Trans-Pacific Steamship offices to the Hastings street offices, and the other departments have been distributed between these two buildings and the Dominion Express Co.'s building. The train operating department has been moved into such of the vacated offices as are not in the section of the station to be demolished.

Sault Ste. Marie Canals Traffic.

The following commerce passed through the Sault Ste. Marie Canals during 1912

Articles			Canadian Canal	U.S. Canal	Total
Copper	Eastbound	Short tons	7,063	109,891	116,954
Grain	"	Bushels	36,916,773	32,107,673	69,024,446
Building stone	"	Short tons		2,282	2,282
Flour	"	Barrels	2,388,432	6,263,721	8,652,153
Iron ore	"	Short tons	31,127,394	15,166,029	46,293,423
Pig iron	"	"	8,487	17,345	25,832
Lumber	"	M. ft. b.m	22,517	645,025	667,542
Silver ore	"	Short tons		....	
Wheat	"	Bushels	117,831,939	56,254,517	174,086,456
General merchandise	"	Short tons	28,101	210,764	238,865
Passengers	"	Number	15,654	17,109	32,763
Coal, hard	Westbound	Short ton	439,942	1,702,543	2,142,485
Coal, soft	"	"	2,499,257	10,289,852	12,789,109
Flour	"	Barrels			
Grain	"	Bushels		100	100
Manufactured iron	"	Short tons	232,747	396,313	629,060
Iron ore.	"	"	6,812	3,188	10,000
Salt	"	Barrels	102,868	558,123	660,991
General merchandise	"	Short tons	707,920	717,998	1,425,918
Passengers.	"	Number	21,628	12,486	34,114
Vessel passages		Number	7,862	14,916	22,778
Registered tonnage		Net	25,789,674	30,947,133	56,736,807
Freight Eastbound		Short tons	35,746,486	19,631,201	55,377,687
" Westbound		"	3,901,375	13,193,614	17,094,989
Total freight....		"	39,647,861	32,824,815	72,472,676

COMPARATIVE STATEMENT FOR THE SEASONS 1911 AND 1912.

Items		Season 1911	Season 1912
Vessels: Steamers	Number	15,160	19,076
Sailing	"	1,681	1,805
Unregistered	"	1,832	1,897
Total.	"	18,673	22,778
Lockages	"	13,292	16,088
Tonnage: Registered	Net	41,653,488	56,736,807
Freight	Short	53,477,216	72,472,676
Passengers	Number	79,951	66,877
Coal: Hard	Short tons	2,060,209	2,142,485
Soft	"	13,272,667	12,789,109
Flour	Barrels	7,246,495	8,652,153
Wheat	Bushels	97,141,911	174,086,456
Grain	"	40,782,609	69,024,546
Manufactured and pig iron	Short tons	412,269	654,892
Salt	Barrels	661,308	660,991
Copper	Short tons	132,481	116,954
Iron ore	"	30,731,235	46,303,423
Lumber	m. ft. b.m.	558,513	667,542
Building stone	short tons	5,342	2,282
General merchandise	"	1,385,918	1,664,783

The Canadian canal was opened April 24, and closed Dec. 19, 1912; season, 240 days.

The U.S. canal was opened April 24, and closed Dec. 16, 1912; season, 237 days.

TENDERS

TENDERS, addressed to the undersigned at Ottawa, and endorsed on the envelope "Tender for Halifax Lightship," will be received up to noon of the Thirty-First Day of January, 1913, for the construction of a first-class single screw steel steam lightship of the following leading dimensions, namely:—

Length between perpendiculars ....114 feet
Breadth moulded .... [illegible] feet
Depth moulded .... [illegible] ft. 8 inches
to be delivered at the Agency of the Department of Marine and Fisheries at Halifax, N.S.

Plans, tender forms and specifications of this Lightship can be seen at the office of the Purchasing Agent of the Marine and Fisheries Department, Ottawa, at the offices of the Collectors of Customs, Toronto, Collingwood and Port Arthur, Ont., and at the Agencies of the Department of Marine and Fisheries at Montreal, Quebec, St. John, N.B., and Halifax, N.S.

Plans, tender forms and specifications can be procured on application from the Purchasing and Contract Agent at Ottawa. All tenders must be made on the form prepared by the Department. The tender form is embodied in the specification.

Each tender must be accompanied by an accepted cheque on a chartered Canadian Bank in favor of the Deputy Minister of Marine and Fisheries, equal to ten per cent. (10 p.c.) of the whole amount of the tender, which cheque will be forfeited if the successful tenderer declines to enter into a contract with the Department or fails to complete the Lightship, in accordance with the contract prepared by the Department.

Cheques accompanying unsuccessful tenders will be returned.

The Department does not bind itself to accept the lowest or any tender.

Newspapers copying this advertisement without authority from this Department will not be paid.

ALEX. JOHNSTON,
Deputy Minister of Marine and Fisheries.
Department of Marine and Fisheries,
—32169 Ottawa, [illegible] Dec., [illegible]

Canada Interlake Line Limited

[illegible] Line, Ltd., [illegible] Co., [illegible] J. W. [illegible]

[illegible] per annum on [illegible]

[illegible]

250 [illegible]

[illegible]

[illegible] built in 1892 at Cleveland, Ohio, [illegible]

Mars, built in 1901 at Lorraine, Ohio, length 346 ft., beam 48 ft.; engines, triple [illegible]

[illegible]

Of the foregoing vessels, the Calgarian [illegible] by the opening of navigation.

[illegible]

Stranding of s.s. Gladstone.

The following judgment re the stranding of the Norwegian s.s. Gladstone, under charter to the Nova Scotia Steel and Coal Co., on the Island of Orleans near Quebec, Nov. 6, was delivered by the Dominion Wreck Commissioner, Commander H. St. G. Lindsay, and concurred in by Capt. F. Nash and Commander I. B. Miles, as nautical assessors.

The stranding was caused by the gross [illegible] of the pilot [illegible] as [illegible] showed a total disregard for the safety of the vessel, knowing, as he ought to have done, the close proximity of the shore to the northward. His statement that he would do the same thing again under similar circumstances, shows that he is thoroughly unfitted for the position of pilot and a menace to the navigation of the St. Lawrence. It is the unanimous opinion of the court that the vessel also touched ground when off Goose island reef, and his license is therefore cancelled. The court desires to call attention to the gross negligence of the master in leaving his vessel altogether in the hands of the pilot and to the very poor system of navigation carried on board, with regard to compass corrections and lookout. It is, unfortunately, unable to deal with the master's certificate, but recommends that a copy of the evidence and this finding be submitted to the Norwegian government.

Size of Boats for Erie Canal.

A commission of New York state officials and others is holding public hearings for the purpose of obtaining expressions of opinions regarding the size of boats to be used in transportation on the Erie canal, [illegible] The original size of boats proposed for the canal [illegible] carrying capacity of 1,000 tons; hence the name 1,000 ton barge canal.

[illegible] normal canal prism is 75 ft. bottom width, 123 ft. water width and 12 ft. depth, which [illegible] channel width is 200 ft., more or less. On [illegible]

[illegible] and narrow prism it is [illegible]

[illegible]

Book Reviews.

MACHINE DESIGN, HOISTS, DERRICKS and Cranes. By H. D. Hess, M.E., Professor of Machine Design, Cornell University. 368 pages, 6½ by 9¼ ins., 336 illustrations. Published by J. B. Lippincott Co., Philadelphia, Pa. Price, $5 net.

Many and varied are the works to be found on machine design, but a new and practically untouched field has been treated upon in this latest book on the subject, to, the matter of crane design in the past has been left, for the most part, to the development of the individual designer. This will be realized by all of that vast body of construction engineers who have required from time to time to design or replace a crane for special work. While dealing principally on crane design, the book has been written with the object of making the information contained of value to all machine designers, for after all the fundamentals of design are the same for all work. The attractive feature of the work is the manner in which practical problems are considered, and the design completely evolved from the fundamental principles, enabling the student to apply the information with which he is equipped, the author realizing that the principal difficulty with the study of machine design lies in the inability of the student to properly apply the information gained in his study of the subject. The book commences at the bottom in a logical manner, dealing first thoroughly with the common materials of construction, noting, in a practical manner, the considerations underlying the selection of the material to be used. From that basis the subject is developed. The book is divided into 12 parts as follows:—Introduction, Frames and Girders, Brakes and Clutches, Winches and Hoists, Pillar Cranes, Jib Cranes, Under Braced Jib Crane, Inverted Post Crane, Wall Crane, Overhead Electric Travelling Cranes, Hoisting Engines and Locomotive Cranes. The subject of cranes is thus approached from all angles, and should prove of particular value to all structural designers, as well as designers of machines.

THEORY OF MECHANICS. R. W. Angus, Professor of Mechanical Engineering, University of Toronto. 6¼ x 9¼ ins.; 238 pages; 147 illustrations. Published by Engineering Society, University of Toronto. Price, $3.

This book is written primarily for the student, the theory underlying machine design alone being touched upon, and in a very thorough manner, the design being considered a separate matter as far as the basic principles of mechanics are concerned. In a general way, the book follows the course of lectures given in the University of Toronto's mechanical engineering department, and as such, represents years of preparation and simplification of explanations, making the work of particular value to all who are desirous of delving into the subject unaided by teachers, the matter laid down in the book being particularly lucid. There are 25 chapters as follows:—The Nature of the Machine, Motion in Machines, Velocity Diagrams, The Motion Diagram, Toothed Gearing, Bevel and Spiral Gearing, Trains of Gearing, Cams, Forces Acting in Machines, Crank Effort and Turning Moment Diagrams, The Efficiency of Machines, Governors, Speed Fluctuations in Machinery, the Proper Weight of Fly Wheels, and Accelerations in Machinery. Most of the treatment followed in the book is that conventionally adopted in most treatises, with the exception of the matter on motion in mechanisms, which is treated by a method called the "phorograph," an improvement on the virtual centre method, invented by Prof. Rosebrugh of the same university. The principal criticism on the book lies in the illustrations, which are crudely gotten up. Printed on heavily coated paper the book would otherwise be a work of art, and it seems unfortunate that it should be marred in such a manner. Fortunately, the value of the work as a text book is in no way decreased thereby.

Among the Express Companies.

The Canadian Northern Ex. Co. has opened offices at Decker, Grays, and Grosse Isle, Man.; and at Macrorie and St. Gregor, Sask.

The Board of Railway Commissioners has approved the British American Ex. Co's. standard mileage tariff of maximum tolls for freight classified as merchandise, C.R. C.1., to become effective, Jan. 1.

The Board of Railway Commissioners has rescinded its order 16896, June 24, 1912, which defined the express delivery and collection limits for Montreal, and has established new delivery and collection limits covering Montreal, Westmount and Maisonneuve.

D. I. Roberts, heretofore General Manager and General Freight and Passenger Agent, Quebec, Montreal and Southern Ry., and Napierville Jct. Ry., and General Canadian Passenger Agent, Delaware and Hudson Co., Montreal, is reported to have been appointed President, United States Ex. Co.

The Canadian Northern Ex. Co. has closed its office at Bala Park, Ont., for the season. Shipments for Muskoka lakes points which bill on Port Carling during the winter are being handled via Bala Road and stage since Dec. 1. An office has been opened at Mafeking, Man., and the office at Birch River, Man., has been closed.

The Board of Railway Commissioners has passed orders establishing collecting and delivery limits as follows:—For Canadian Express Co., in Sackville and Sussex, N.B.; for Dominion Express Co., in Windsor and Yarmouth, N.S.; Sackville, Sussex and Woodstock, N.B.; McLeod, Alta.; for Halifax and South Western Ry's. express department, in Yarmouth, N.S.

The Minister of Railways has announced that arrangements have been made whereby the Dominion Ex. Co. will place its service on the Intercolonial Ry. and the Prince Edward Island Ry., and all Government railway branches, from Jan. 1, in addition to the service given by the Canadian Ex. Co., which has hitherto operated exclusively, over the Government lines.

W. W. Kemp, agent, Canadian Ex. Co., Portland, Me., has retired from the service after 50 years' continuous service with the company, under the provisions of the pension rules. The whole of his service has been at Portland, and he was appointed agent there, Mar. 26, 1903. John Pullen, President, wrote him recently conveying the company's thanks for faithful and efficient work.

The Dominion Ex. Co. has moved its shipping department in Winnipeg from the old quarters at the C.P.R. station to the new express building on the west side of Main street. The public entrance is at 714 Main street, and the team entrance at the head of King street, near the C.P.R. tracks. The company's business office will continue to be maintained at 212 Bannatyne avenue.

In the Divisional Court at Toronto, Nov. 15, judgment was given in the case of Wilkinson vs. Canadian Express Co., on an appeal by plaintiff from the judgment of Winchester, S. J. of the County of York of Sept. 12, 1912, in an action to recover $500 for the value of a [illegible] alleged to have been lost by defendants in transit and for damages. At the trial judgment was awarded plaintiff for $280 with costs up to payment into court and no set-off allowed to defendant. The Divisional Court gave the following judgment on the appeal:—The plaintiff is not within the special contract at all. The company is liable in our view for the full value of the goods. There is nothing to prevent the express company agreeing to pay twice the value of the goods carried, the order of the Railway Board notwithstanding. In this case what the company did was to take the plaintiff's goods as a common carrier and lost them without limiting its liability to him. The evidence justifies a verdict for $280, and we think plaintiff should have judgment for that sum, with costs here and below.

Trade and Supply Notes.

The matter which appears under this heading is compiled, in most cases, from information supplied by the manufacturers of, or dealers in, the articles referred to, and in publishing the same we accept no responsibility. At the same time we wish our readers to distinctly understand that we are not paid for the publication of any of this matter, and that we will not consider any proposition to insert reading matter in our columns for pay or its equivalent. Advertising contracts will not be taken with any condition that accepting them will oblige us to publish reading notices. In other words, our reading columns are not for sale, either to advertisers or others.

THE CANADIAN WESTINGHOUSE CO. has declared a bonus of 2% in addition to the regular quarterly dividend of 1¾%, making a total distribution of 9% for 1912.

FRANKLIN RAILWAY SUPPLY CO., New York City, announces that Alan Lichtenhein, son of the late A. Lichtenhein, has entered its service and will look after its Canadian interests, as his father did up to the time of his recent fatal illness.

THE AMERICAN VANADIUM CO. Announces that on 30 Pacific type locomotives being built for the C.P.R. by the Montreal Locomotive Works the following parts will be made of Vanadium steel: main driving axles, piston rods, main crank pins and main frames. These locomotives will have a total weight of 220,000 lbs.

THE STANDARD UNDERGROUND Cable Co. of Canada, Ltd., Hamilton, Ont., has issued a booklet, "Sterling Rubber Insulated Wire and Cable," which will be sent on application to anyone interested. It explains the company's position as manufacturer of standard products, the company having been established so that the increasing Canadian business of the Standard Underground Cable Company, Pittsburgh, Pa., might be handled with economy and dispatch. Full particulars are given of the sterling rubber insulated wire made by the Canadian company in Hamilton, which is guaranteed as being identical in quality with that made by the U.S. company.

THE JOLIETTE STEEL CORPORATION, Ltd., has been formed with an authorized capital of $2,000,000, to take over the Joliette Steel & Iron Foundry, Ltd., at process converter steel castings, etc. The process converter steel castings, &c. The building of the new plant, which will have a capacity of four times the present one, will be started in February or March. The C.P.R. has put in a half mile spur to the site and there is also a good connection with the Canadian Northern Ry. Shawinigan electric power will be used. S. Vissot, manager of the Joliette Steel and Iron Foundry Co., will be manager of the new company.

Transportation Associations, Clubs, Etc.

The names of persons given below are those of the secretaries.

Canadian Car Service Bureau, J. E. Duval, 401 St. Nicolas Building, Montreal.

Canadian Freight Association (Eastern Lines), G. C. Ransom, Canadian Express Building, Montreal.

Canadian Freight Association (Western Lines), W. E. Campbell, [illegible] Canada Building, Winnipeg.

Canadian Railway Club, J. Powell, St. Lambert, Que. Meetings at Montreal, 2nd Tuesday each month, 8.30 p.m., except June, July and August.

Canadian Society of Civil Engineers, C. H. McLeod, 413 Dorchester St. West, Montreal.

Canadian Street Railway Association, Acton Burrows, 70 Bond Street, Toronto.

Canadian Ticket Agents' Association, E. de la Hooke, London, Ont.

Central Railway and Engineering Club of Canada, C. L. Worth, 409 Union Station, Toronto. Meetings at Toronto 3rd Tuesday each month, except June, July and August.

Dominion Marine Association, Counsel, F. King, Kingston, Ont.

Eastern Canadian Passenger Association, G. H. Webster, 54 Beaver Hall Hill, Montreal.

Engineers' Club of Montreal, R. W. H. Smith, Beaver Hall Square, Montreal.

Engineers' Club of Toronto, R. B. Wolsey, 94 King St. West, Toronto.

Great Lakes and St. Lawrence River Rate Committee, Jas. Morrison, Montreal.

International Water Lines Passenger Association, M. R. Nelson, New York.

Niagara Frontier Summer Rate Committee, Jas. Morrison, Montreal.

Nova Scotia Society of Engineers, A. R. McCleave, Halifax, N.S.

Quebec Transportation Club, J. S. Blanchet, Quebec.

Ship Masters' Association of Canada, H. O. Jackson, 37[illegible] Huron street, Toronto.

Shipping Federation of Canada, T. Robb, 526 Board of Trade, Montreal.

Western Canada Railway Club, W. H. Rosevear, 25½ Princess St., Winnipeg. Meetings at Winnipeg 2nd Monday each month, except June, July and August.

Transportation Conventions in 1913.

Jan. 21-23.—American Wood Preservers' Association, Chicago, Ill.

Mar. 18-20.—American Railway Engineering Association, Chicago, Ill.

May.—International Railway Fuel Association, Chicago, Ill.

May 6-9.—Air Brake Association, St. Louis, Mo.

May 19-21.—Railway Storekeepers' Association, Chicago, Ill.

May 20.—Association of Railway Telegraph Superintendents, St. Louis, Mo.

May 21.—American Railway Association, New York.

May 26-29.—Master Boiler Makers' Association, Chicago, Ill.

May 28.—Association of American Railway Accounting Officers, Atlantic City, N.J.

June.—Association of Railway Electrical Engineers, Atlantic City, N.J.

June 11-13.—American Railway Master Mechanics' Association, Atlantic City, N.J.

June 16-18.—Master Car Builders' Association, Atlantic City, N.J.

June 17-20.—American Association of Freight Agents, Buffalo, N.Y.

June 18.—Freight Claim Association, Bluff Point, N.Y.

Aug.—Travelling Engineers' Association, Chicago, Ill.

Aug. 18.—International Railroad Master Blacksmiths' Association, Richmond, Va.

Sept. 8-12.—Roadmasters' and Maintenance of Way Association, Chicago, Ill.

Sept. 9-12.—Master Car and Locomotive Painters' Association of U.S. and Canada, Ottawa, Ont.

Ottawa Northern and Western Railway

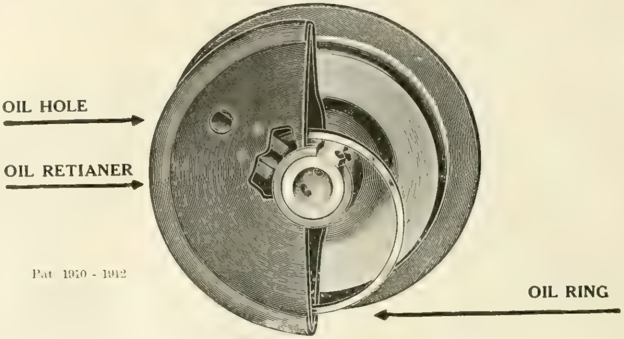
NOTICE. The Ottawa Northern and Western Railway Company will apply to the Parliament of Canada, at its next session, for an Act extending the time within which it may construct the extension of its main line from Maniwaki to a point at or near James Bay and the extension to Lake Temiscamingue, authorizing an increase of its bonding power, and for other purposes.

Dated at Montreal, this 23rd October, 1912.

H. C. OSWALD,
Secretary.

Pringle, Thompson & Burgess,
Ottawa agents.

THE MOST IMPROVED TROLLEY WHEEL OF THE AGE



By actual tests this wheel has proved to outwear several ordinary trolley wheels, as the sides retain oil, making it an automatic oiler, sides to be filled with oil only once in 24 hours. It has also been tested on sharp curves with kinky overhead wire and found not to leave the wire, even under the severest test.

For Sale by

HAMILTON TROLLEY WHEEL CO., LIMITED
HAMILTON, ONT.

The Commissioners of the Transcontinental Railway.

NOTICE TO CONTRACTORS

Tenders for Machines, Tools, Appliances, Motors, Furnaces, Cranes, Etc.

SEALED TENDERS, addressed to the undersigned and marked on the envelope "Tender for Machines, Tools, Appliances, Motors, Furnaces, Cranes, Etc.," will be received at the office of the Commissioners of the National Transcontinental Railway, at Ottawa, until twelve o'clock noon of the Thirteenth day of February, 1913, for the furnishing and delivery of the Machines, Tools, appliances, Motors, Furnaces, Cranes, Etc., required for the equipment of the Car Department Shops, Transcona, Plant, of the Commissioners of the National Transcontinental Railway, at Transcona, Manitoba.

Tenders will be considered for any portion, or all of the equipment.

Specifications and forms of tender may be obtained at the office of Mr. W. J. Press, Mechanical Engineer, Ottawa, Ontario.

Persons tendering are notified that tenders will not be considered unless made on the printed forms supplied by the Commissioners.

Each tender must be signed and sealed by all the parties to the tender, and witnessed and be accompanied by an accepted cheque on a Chartered Bank of the Dominion of Canada, payable to the Commissioners of the Transcontinental Railway, for a sum equal to ten per cent. (10 p.c.) of the amount of the tender.

Any person whose tender is accepted shall within ten days after the acceptance thereof sign the contract, specifications and other documents required to be signed, and in any case of refusal or failure on the part of the party whose tender is accepted to complete and execute the contract with the Commissioners, the said cheque shall be forfeited to the Commissioners as liquidated damages for such refusal or failure, and all contract right acquired by the acceptance of the tender shall be forfeited.

The cheques deposited by parties whose tenders are accepted will be deposited to the credit of the Receiver General of Canada as security for the due and faithful performance of the contract according to its terms.

The cheques deposited by parties whose tenders are rejected will be returned within ten days after the signing of the contract.

The right is reserved to reject any or all tenders.

By order,
P. E. RYAN,
Secretary.

The Commissioners of the
Transcontinental Railway,
Dated at Ottawa, December 11th, 1912.

Newspapers inserting this advertiseement without authority from the Commissioners will not be paid for it. 32910

CANADIAN PACIFIC RAILWAY COMPANY.

Issue of New Ordinary Capital Stock.

For the purpose of taking a record of the Shareholders entitled to receive the rights to subscribe to Sixty Million Dollars additional Ordinary Capital Stock of the Company, the Common Stock Transfer Books will be closed in Montreal, New York and London at three p.m. on January 2nd, and will be reopened at ten a.m. on January 15th, 1913.

By order of the Board,
W. R. BAKER,
Secretary.

Montreal, December 20th, 1912.

CANADIAN NORTHERN ONTARIO RAILWAY COMPANY.

NOTICE is hereby given that the Canadian Northern Ontario Railway Company will apply to the Parliament of Canada, at its present session, for an Act defining and increasing the bonding powers of the Company.

Toronto, 19th December, 1912.

GERARD RUEL,
Chief Solicitor.

Canadian Railway and Marine World.

February, 1913.

Algoma Central and Hudson Bay Railway Terminals at Sault Ste. Marie.

By R. S. McCormick, M. Am. Soc. C. E., Chief Engineer

The Algoma Central and Hudson Bay Ry. Co. is constructing terminal facilities at Sault Ste. Marie, Ont., in connection with the work of completing the railway through to the National Transcontinental Ry. at Hearst, which are intended to provide accommodation for the expected business of that road. These terminals consist of locomotive house, machine shop, combined general stores and mechanical department office building, new station and yard office, all located in a new terminal yard at Tagona (town of Steelton, a suburb of Sault Ste. Marie), a new terminal station and office building at the foot of Bruce St., in Sault Ste. Marie, and a freight house at the foot of Dennis St. close by.

In addition to the building construction, the main line is being extended to Bruce St., and a siding extension to the New Ontario Dock, to provide for temporary dock facilities. A new freight and terminal yard is also being built at the site of the locomotive house and machine shop, together with an overhead combined electric railway and highway bridge crossing over this yard.

The new yard layout will provide yard tracks, entrance to locomotive house and a new transfer yard at that point. About six miles of new tracks are being laid, to provide for which it is necessary to excavate about 70,000 cu. yds. of mixed clay and boulder material. This excavated material is used to fill up areas below grade in the new yard, build approaches to the overhead bridge and to grade the main line extension to Bruce St. and on to the dock referred to.

The overhead structure consists of earth embankments leading up to steel trusses on concrete spanning the opening. This steel structure is designed under the Dominion Government specification for electric railway and highway loadings and is 26 ft. wide c. to c. of main trusses, carrying a single line of electric railway across on the south side. A roadway 15½ ft. wide in the clear is provided for alongside the car track. Outside the north truss there is provided a sidewalk 7 ft. wide on extension cross girders. The whole structure is 35 ft. wide and 190 ft. long, consisting of one 108.7 ft. and one 81.3 ft. spans. At present a temporary structure carries the electric railway over, pending the installation of the steel structure. On the west side of this crossing a pile trestle was driven to carry the electric railway temporarily, and this is now being filled and embankment widened to accommodate the highway and sidewalk. The concrete work for this structure was built in 1902, but the bridge was never completed. Due to the peculiar spacing and argle at which the abutments and the pier were located, the designing of the steel was much complicated. The Canadian Bridge Co. has the contract for erecting the steel structure complete, upon competitive plans submitted.

The locomotive house, machine shop, store building, coaling station, ash pit, sand house, etc., are all being constructed under contract with the Arnold Co. of Chicago, P. L. Battey being Chief Engineer of its industrial and railway shops department. This firm was called upon by the writer to submit preliminary plans for the entire layout in the spring of 1911. The plans submitted were then carefully gone into in conjunction with the Master Mechanic and Superintendent, and after long deliberation a plan was evolved, based upon the general plan submitted, which filled the requirements. The Arnold Co. was then awarded the contract to provide detail plans and construct the locomotive house, machine shop, store building, and the outlying structures and accessories, cinder pit, coal dock, tank, racks, etc. The Arnold Co. also installs the machinery and all other shop and locomotive house equipment. The railway company's forces are doing all track work, including the filling behind the abutments of the overhead crossing. The station and yard office building at this site is let by contract to the McPhail & Wright Construction Co., Sault Ste. Marie. This station building is a two-story brick veneered building, with basement of concrete. It is 26 by 40 ft. in size, with small waiting room, baggage room and office on ground floor, trainmen's locker room in basement, and Car Accountant, Trainmaster and road department offices on the 2nd floor.

LOCOMOTIVE AND CAR REPAIR SHOPS.

The shop layout consists of a locomotive house, machine shop and store house, with provisions made for adding a freight car repair shop, a woodworking shop and a passenger car repair shop in the future.

The yard layout provides through tracks for passenger and freight service, storage and switching tracks, and tracks serving all present and proposed buildings, with two tracks into locomotive house from the west and two into the machine shop from the east. On the two tracks to the locomotive house are located the cinder pit (having a single depressed track, with provision for another pit in the future), coaling station, and water tank of 50,000 gallons capacity. A line through the locomotive house and machine shop is in a northeast and southwest direction, but hereinafter will be called east and west to simplify explanations.

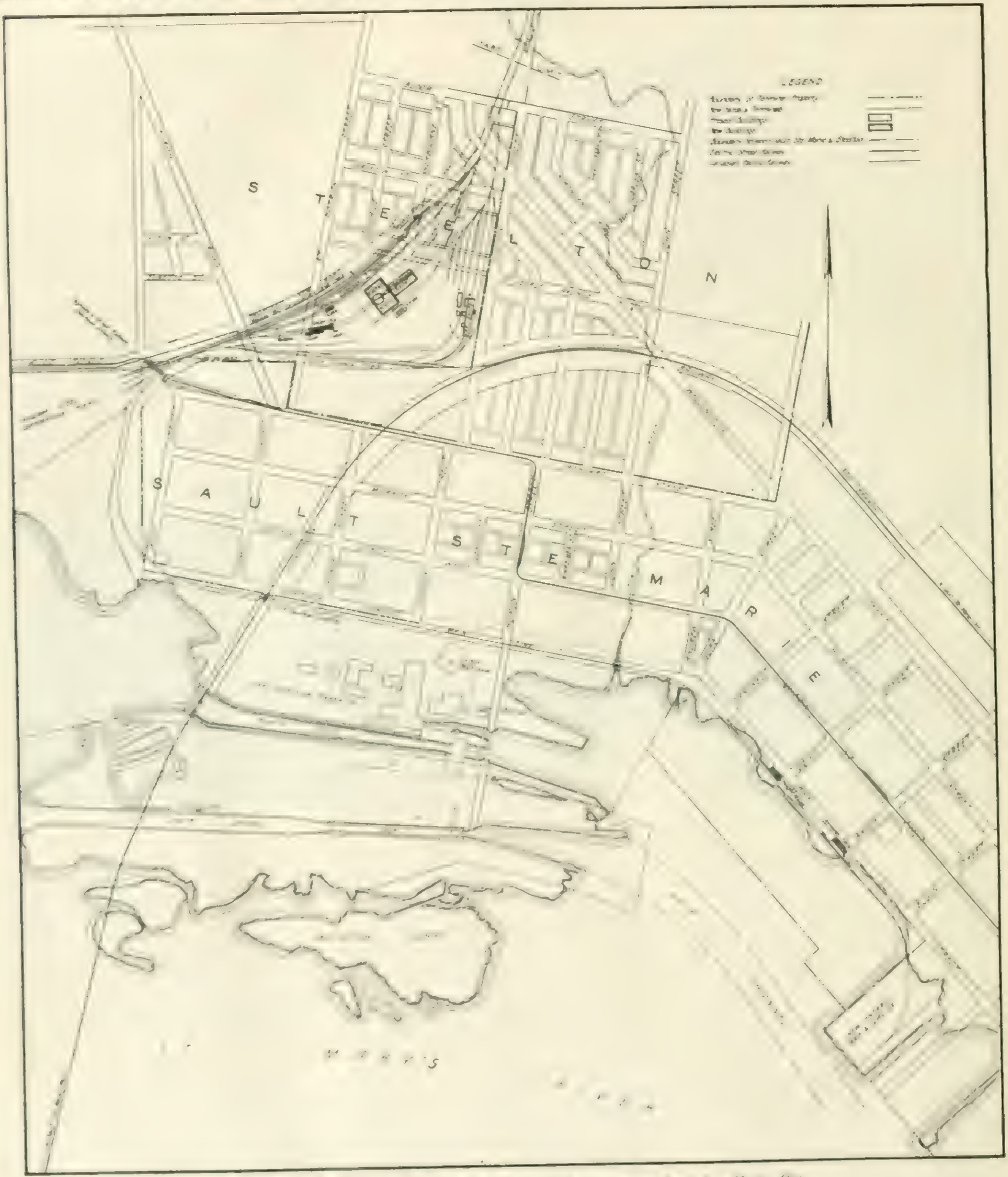
LOCOMOTIVE HOUSE: The present locomotive house covers an area of 178 by 266 ft. and is designed for a future extension of 88 by 266 ft. on the west side. The building is a departure from the ordinary locomotive house in that it completely shelters and encloses an 80 ft. deck turntable. There are at present 14 locomotive pit tracks radiating from the turntable within the building, and, with the future extension, the building will enclose 24 locomotive pit tracks in addition to the turntable. The operating advantages thus afforded by the enclosed turntable, eliminating many causes for delays due to weather conditions, and saving in the expense of handling locomotives in bad weather, will be readily appreciated by those familiar with the climate and deep snows prevalent in this or similar locations. There are two

Algoma Central and Hudson Bay Railway Mechanical Buildings and Yard.

[illegible] from the west, both leading direct to the turntable. There are also two radiating tracks [illegible]

[illegible] 5½ ft. above grade, or 5 ft. above the floor line. This wall has [illegible] capped off at the top for the full length.

also, by its color, contrasts with the brick above. Above this base the brick work is laid up in stretcher bond with struck joints of cement mortar and forming pilasters 3 ft. wide and 17 ins. thick. These pilasters



New Terminal Arrangement of A. C. & H. B. Ry. at Steelton and Sault Ste. Marie, Ont.

[illegible] drop pits.

[illegible] wall for the outside walls of brick is car-

[illegible] which [illegible]

are 22 ft. centres, alternate ones supporting [illegible] one third of the area is composed of pivoted sections which can be opened variable amounts for ventilation. A maximum amount of outside light is obtained through these windows, which are glazed with factory ribbed glass. Above the windows is a four course brick corbel, which brings the face of pilasters and panels above windows flush, and gives the effect of weight at the top of the building, though this wall is but 13 ins. thick. The brick work above window and door openings is supported on steel lintels of the I beam and bottom plate type. The window lintels have an angle on the bottom of the plate for its entire length, to which the top of the steel sash is fastened with hook bolts, providing a neat, secure and weathertight anchoring.

Rear View of A.C. & H.B. Ry., Tagona Shops.

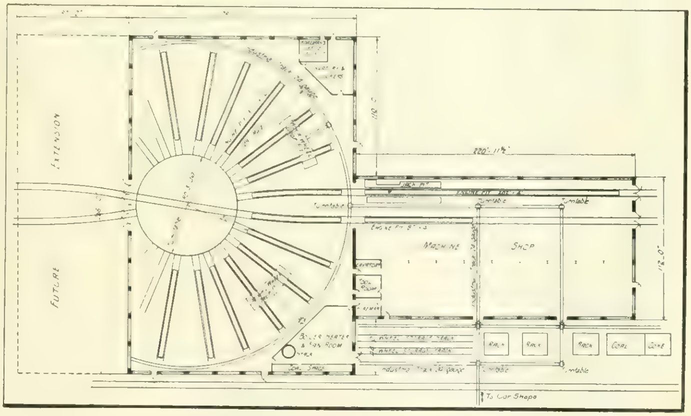
All outside doors in this building are of wood, the pass doors being 3½ by 7 ft., and the large track doors are 13 ft. wide and 17 ft. high. The track doors consist of two parts, each 6½ ft. wide with a 3¼ by 7 ft. pass door and a sash at the top with fifteen 10 by 16 in. lights. These doors are 3¼ ins. thick and are of a 3 ply construction, fitted with wrought iron stiffeners, heavy hinges and a locking device of special design.

Steel columns of latticed channel box type are used and are spaced 44 ft. centres each way, except at the turntable, which is in the centre of a clear space 88 ft. square. With the exception of the above mentioned space the roof is supported on 44 ft. steel trusses, 18 ft. clear above top of rail in all cases, with 22 ft. wide monitors over every bay running from east to west for full width of building, with one running in a transverse direction between two, over the turntable. These monitors are all equipped with Pond continuous steel sash hinged at top to swing out, the angle of which may be adjusted by the worm and gear gang operator, which is controlled from the floor. This sash is so built that when opened to its full extent it will permit of no rain entering under ordinary conditions, and consequently provides good ventilation at all times. Steel beam purlins resting on the roof and monitor trusses carry two inch wood sheathing, on which is laid a 5 ply Barrett specification roofing, finished off at edges with a copper gravel guard, giving a good, substantial roof. The roofs of the monitors drain over the edges to the roof below, which is saddled to drain water to cast iron conductor heads, set in top of box columns, and connected to cast iron soil pipe, set in concrete piers by wrought iron pipe downspouts, making a neat and inconspicuous disposal of roof water to sewers. The entire floor is of vitrified paving brick laid on edge in a sand cushion on a 5 in. base of concrete.

In the northeast corner of the locomotive house is a room approximately 40 ft. square, with partitions of wooden studs, expanded metal and cement plaster separating it from the rest of the interior. A portion of this room, 17 by 22 ft., is partitioned off for the foreman's office, and has a maple floor, one door to the outside and one to the inside of the building. The rest of the space is devoted to a locker and wash room, with concrete floor, for the employes. The equipment will consist of 154 steel lockers in double rows, back to back, with ample aisles between, in which there are seats; also a double row of lavatories, 32 in number, at one side of the room, which provide adequate washing facilities for the employes. This room is well lighted, having large windows on both sides, by which ventilation is also furnished.

In the southeast corner of the building is a space approximately 40 ft. square, partitioned off in the same corner as the locker room. In this room are located the boilers, stack, heating fan and engine, boiler feed pumps and vacuum pump. Along the south wall is a coal bin, 40 by 6 ft. wide, provided with small doors in the outside walls, permitting of unloading coal direct from cars into the coal storage space.

The turntable is 80 ft. long, 200 tons capacity, standard deck type, and is operated by a pneumatic turntable tractor. The turntable ring wall is of concrete, with four expansion joints equidistant on its circumference, the inside diameter of which is 80 ft. 5 ins. This wall is capped off at the base of rail with curved segmental curb timbers, 8 by 14 ins., each of which is fastened at two places with ¾ in. anchor bolts to concrete. The circular rail of the turntable is fastened to 6 by 8 ins. by 2 ft. creosoted ties anchored to a concrete base, cast integral with the ring wall. The pit floor is of 5 in. concrete pitched to drain to circular gutter 14 ft. from centre of pit, which drains to a large sump, the top of which is covered with a cast iron grating, and is connected to sewer. The centre pier is of concrete and liberal in size, being 11½ ft. square at the base.



A.C. & H.B. Ry. Locomotive House and Machine Shop.

All pits under locomotive stalls are of concrete, 70 ft. long by 3 ft. 11 ins. wide; are 2 ft. 8 ins. deep at the high end and drained to low end, which is 3 ft. 2 ins. deep, and has a sump covered with a cast iron grating and a connection to sewer. All pits are absolutely clear on the sides, having no projections of any kind, and the bottoms are paved with vitrified paving brick, arched at centre and laid in ½ in. sand cushion on concrete.

The 80 lb. rails used exclusively are supported on the concrete side walls of pits, spiked to 6 by 8 ins. by 1 ft 4 ins. creosoted cross ties, which are set and anchored in the concrete. Outside of the rails, parallel to same, and flush with floor, are 6 by 10 in. dressed jacking timbers, fastened to blocks, which may be readily taken up at any time when repair of rails is necessary, without disturbing any of the brick floor paving.

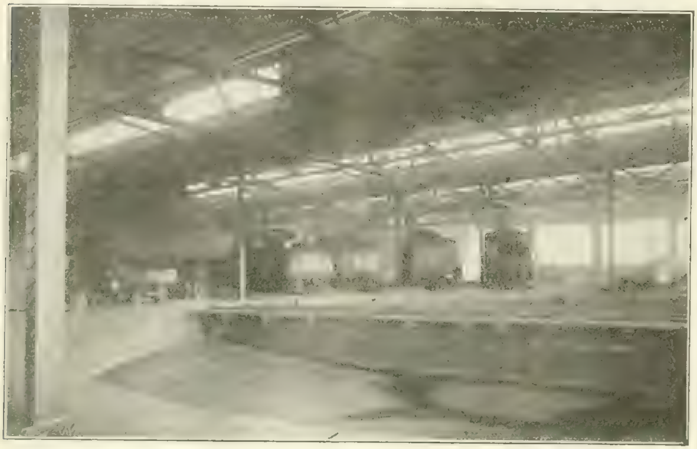
The wheel drop pits are of concrete and extend radially a little more than the width of two stalls, having a 24 in. gauge track on the concrete bottom from end to end for transferring wheels on truck, which, when lifted to floor level, are run on 24 in. gauge track connected to circular industrial track at end of stalls by a turntable. The pits are to be equipped with modern air jacks and removable rails, supported by I beams across the pit. Drainage is obtained by gutters, which drain to a sump connected to sewer.

The smoke jacks are of sectional cast iron construction, with an opening 8 ft. by 3 ft. and a 30 in. diameter stack with a hood at the top. The bottom of the jacks are 16½ ft. above the top of rail and the jacks are supported upon the steel roof members.

The building is heated by the indirect system, consisting of a steam driven fan and Green Positivflo horizontal heater coils. The hot air is forced through underground concrete tunnels and vitrified tile ducts to the turntable pit and all engine pits. Dampered outlets are provided, giving good distribution throughout the building. Steam for heating is supplied by three internally fired boilers of 150 h.p. each, for 100 lbs. working pressure, fitted with 50 in. inside diameter by 12¾ in. long, Morison furnaces. A steel smoke breeching connects the boilers to a Weber reinforced concrete chimney, both outer shell and lining of concrete, lining extending 39½ ft. above grade and top of outer shell 125 ft. above grade. The chimney is protected from lightning by modern lightning rods, well grounded.

Steam, air and water are conveyed to the locomotive stalls by pipe mains, with drops and valved outlets at the columns, between stalls. One set of drops fitted with double valves and connections serves every two stalls.

THE MACHINE SHOP is 112 by 221 ft. long, the long way being in an east and west direction, and is directly adjacent to the locomotive house, the west wall of the machine shop being the east wall of the locomotive house. All foundations are of concrete, as are the base walls to the sill lines, the same as described for the locomotive house. Brick is used for the walls above the sill line, and extends to under side of roof, being supported over window and door openings by steel lintels. The building consists of two bays, the one on the north side being 66 ft. and the one on the south side 44 ft. wide. Lengthwise of the building there are 10 bents at 22 ft. each.



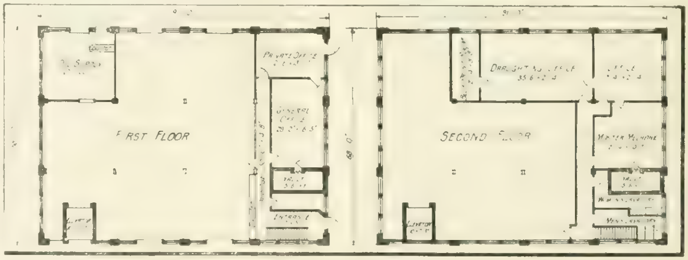
Interior of A.C. & H.B. Ry. Locomotive House.

Over the 44 ft. bay is a single pitch steel truss, supported by steel columns at each end with a clearance below to floor line of 18 ft. 2 ins. This truss carries I beam purlins, which in turn carry the concrete slab roof. Over the 66 ft. bay, with a clearance of 32 ft. above the floor line, is a steel truss with steel monitor framing, which is about 33 ft. wide and extends the full length of the building. I beam purlins are attached on both truss and monitor for the support of concrete roof slabs. These trusses are supported at the inside by the same columns that support the 44 ft. trusses and by steel columns at the wall. The inside and the north wall columns are of heavy construction, and at the height of 24½ ft. above the floor support a crane rail girder on which a 10 ton. 63 ft. 4 in. span, electric travelling crane operates.

Steel sash are used exclusively, both sides of the monitor, and that portion of the wall where the roof over the 44 ft. bay is lower than the one over the 66 ft. bay is equipped with two rows of 3 ft. high, Pond continuous sash, for approximately the full length of the building, one row being fixed in each case and the other operated by gang operator from the floor. The steel sash set in the brick walls are of the unit type, which, in the south wall, are 19 ft. wide by 14 ft. high in one horizontal row, and in the north wall are two rows, the lower one being of units 19 by 14 ft., and the upper 19 by 11 ft. All the sash have pivoted sections, which may be swung to secure the desired ventilation.

The roof is of reinforced cement tile, 1¾ ins. thick, cast in slabs about 5½ ft. long and 2 ft. wide. These slabs bear directly on the steel purlins and on the wall at the outside, and are covered with 5 ply Barrett specification roofing, which is finished off at the edges with copper gravel guards. Drainage from this roof is allowed to run off edges to the ground. The floor of this building is to consist of a 5 in. concrete sub-base and 1 in. sand cushion, on top of which will be laid 3 in. creosoted maple paving blocks.

In the southwest corner is located the foreman's office, approximately 12 by 12½ ft., with maple floor and partitions of sheet metal and sheet metal ceiling, all of which are supported on rolled steel sections. North of, and adjacent to this office, is the tool room, 22 by 22½ ft., with creosoted block floor and steel framed partitions of sheet metal and wire mesh, 8 ft. high. North of the tool room is a space about 11½ by 22 ft., which is provided for a general and private lavatory. This lavatory is to be equipped with seven automatic compression closets, inclosed in Brown sanitary water closet shields.



A.C. & H.B. Ry. Store House.

The erecting pits are located on the two through tracks leading from the locomotive house through the erecting shop. These tracks are on 21 ft. centres in the erecting shop. An electrically operated locomotive screw jack hoist is provided on one of these pits for unwheeling and mounting locomotives. The hoist consists of a pair of stationary screw jacks, and a pair of movable jacks mounted on rails outside of the pit rails. Each pair of jacks is provided with a lifting beam, which extends across the track from one jack to the other. The vertical movement of the beam is such as to permit the passage of a 72 in. driver underneath the beam when lifted to its full height. The jacks are all operated together.

The overhead 10 ton electric crane in this bay affords a method of handling heavy parts for repair work in any part of this section of the shop. A 24 in. gauge industrial track, running in the centre between the two standard gauge tracks, connected to the circular track in the locomotive house by a small turntable, extends to within 55 ft. of the east end of the machine shop. Two narrow gauge tracks are connected to this at right angles by turntables, one in the centre of the third bay from the east end and one in the sixth. These tracks run south through the machine tool department and through doors out into the yard.

The space used for the machine tools and blacksmith shop comprises the 44 ft. bay and about a 10 ft. strip of the 66 ft. bay, with the exception of the space allotted for office, tool room and lavatory, and space for the fan and heater. This building is heated in the same manner as the locomotive house, except the hot air is partially distributed through overhead galvanized sheet metal ducts.

THE STORE HOUSE is located in a position of easy access from all the present and proposed buildings, and has necessary facilities for the receiving and shipping of material, having platforms on each side adjacent to tracks. The building is 68 by 91 ft., and provision is made for an extension on the west end. It has three floors, a basement, first floor and second floor, and their heights are 10 ft., 13 ft., and ranging from 12 to 14 ft. on the second floor, respectively. The entire building, from foundation to first floor line, is of concrete, reinforced where necessary, including the 5 ft. permanent platforms and walls of same, in which are steel sash for the admission of light and ventilation to basement. The use of this space under platforms gives additional floor space in basement. The first floor is of reinforced concrete of the mushroom or flat slab type. The stairs to the basement, from the first floor in the southeast corner, are of reinforced concrete, and are inclosed in walls of expanded metal and cement plaster, with steel door and frame into basement.

Directly alongside of the stair well is located a lavatory room with light from the windows in the outside wall. A door from this room furnishes access to the janitor's closet under the stairs. At the east end, a little to one side of the centre, is a brick vault 6 by 16 ft., which is directly underneath the vaults on first and second floors. In the northwest corner of the basement is the oil storage room, approximately 27 by 22 ft. The walls of this room are of expanded metal and cement plaster, with one doorway 4½ by 7 ft., equipped with double sliding automatic fire doors. Light and ventilation are admitted through windows in north and west walls to this room. The entire basement floor is intended for the storage of heavy materials, and consists of

6 ins. of concrete.

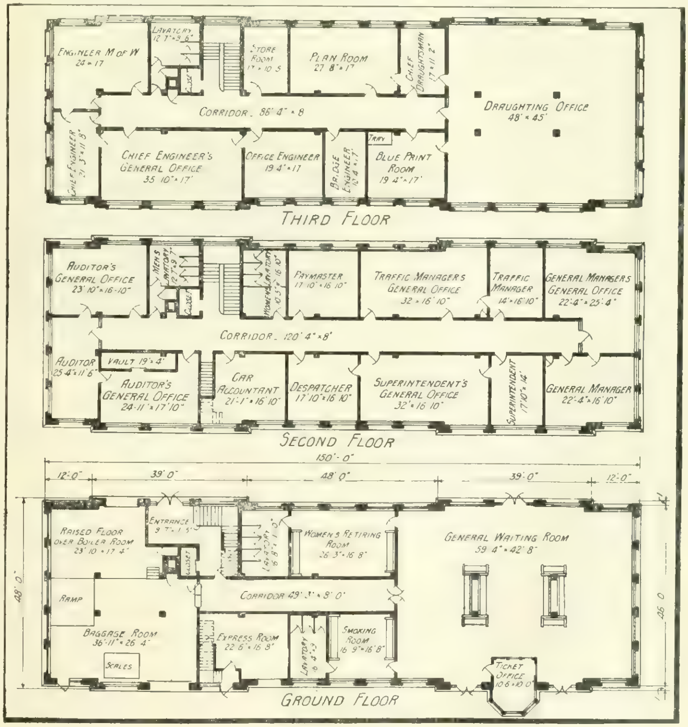
A.C. & H.B. Ry. Terminal Building under Construction, Dec., 1912.

The first floor is used for the storage of both light and heavy parts, in racks and bins, and necessarily all shipping and receiving is done on this floor from platforms through doorways 8 by 7½ ft., equipped with rolling steel shutter doors, of which there are two on both the north and south sides. The main entrance is at the south end of the east wall. Just inside of the entrance is a stairway to the second floor and at the side of this is a hall, which leads to a counter in the storeroom. At the east end of this floor is located a small tool storeroom 5 by 16½ ft., a vault 6 by 15½ ft., a general office 16½ by 28 ft., and a private office 14 by 21½ ft. These rooms are partitioned off with wooden studs and lath and plaster walls, with the exception of the vault, which is of concrete. Access is had to these offices by a long hall at the back, running north and south, which is separated from the large storeroom by a long counter and railing with a pass gate. In the northwest corner on this floor is the oil supply room, which is fireproofed with expanded metal and cement plaster partitions and ceiling. The inside door is a double sliding automatic fire door, and access is had to the outside platform by a rolling steel shutter door and a pass door.

The superstructure above the first floor is of brick, with steel lintels over door and window openings, steel columns and girders, with second floor of heavy joist and plank construction. The brick walls and steel columns extend to roof, with steel girders between columns, which support the heavy roof joists and sheathing. The roof is of the low pitch type with standing gutters, and is drained by inside downspouts of wrought iron pipe connected to cast iron conductor heads at roof and to the sewer in the basement. Barrett 5 ply specification roofing is used and is finished off at edges of overhanging roof with copper gravel guards.

The second floor is used for the storage of light material and also for offices. These are partitioned off with wood studs and metal lath, and all the walls and ceilings of the offices are plastered. The rooms consist of the Master Mechanic's office, 30 by 21 ft., a private office 21 by 21 ft., a draughting room 21 by 35½ ft., a blueprint room 9 by 21 ft., a concrete vault 6 by 15½ ft., and two lavatory rooms. This whole building is well lighted from all sides by large windows of steel sash, provided with adjustable, pivoted, ventilating sections. A hand power elevator serving all floors and basement is located in the southwest corner of this building, the platform of which is 7¼ by 10 ft., with a capacity of 2,000 lbs. and a lift of 23 ft.

On the north side of the store house, outside of the concrete platform, there is a temporary wood platform 20 ft. wide for the full length of the building, and 25 ft. wide for a length of 40 ft. east of the building line, with a ramp 7 ft. wide and 30 ft. long, to grade level. A platform of the same type is built across the east face of the building, and provides storage space for parts that may be left exposed to the weather, also for additional receiving and shipping facilities, and the ramp provides for trucking to and from the building.


Engineer M of W 24 × 17
Lavatory 12 7" × 9 6"
Closet
Store Room 17 × 10 5
Plan Room 27 8" × 17
Chief Draughtsman 17 × 11 2"
Corridor 86' 4" × 8
Draughting Office 48' × 45'
Chief Engineer 21 3" × 11 8"
Chief Engineer's General Office 35 10" × 17'
Office Engineer 19 4" × 17
Bridge Engineer 10 4 × 17
Tray
Blue Print Room 19 4" × 17'
Third Floor
Auditor's General Office 23' 10" × 16-10"
Mens Lavatory 12 7" × 9 7"
Closet
Womens Lavatory 10 5" × 16 10"
Paymaster 17 10" × 16 10"
Traffic Managers General Office 32 × 16' 10"
Traffic Manager 14' × 16' 10"
General Managers General Office 22'-4" × 25'-4"
Corridor 120' 4" × 8'
Auditor 25 4" × 11' 6"
Vault 19' × 4'
Auditor's General Office 24-11' × 17' 10"
Car Accountant 21'-1" × 16' 10"
Despatcher 17' 10" × 16 10"
Superintendent's General Office 32' × 16 10"
Superintendent 17' 10" × 14'
General Manager 22'-4" × 16' 10"
Second Floor
150'-0"
12'-0"
39' 0"
48' 0"
39' 0"
12'-0"
48' 0"
Raised Floor over Boiler Room 23' 10 × 17 4"
Entrance 9 7" × 1 5"
Closet
Lavatory 16 8" × 1 0"
Womens Retiring Room 26 3" × 16 8"
General Waiting Room 59 4" × 42' 8"
Ramp
Corridor 49' 3" × 8' 0"
Baggage Room 36'-11" × 26 4"
Scales
Express Room 22 6" × 16 8"
Lavatory 16 4" × 9
Smoking Room 16 9" × 16' 8"
Ticket Office 10 6 × 10 0"
26 0
Ground Floor

A.C. & H.B. Ry., Bruce St. Terminal Station.

OIL STORAGE EQUIPMENT: The equipment of the oil storage room in the basement, and the oil supply room on the first floor of the storehouse, is very complete towards providing an efficient and clean system of oil handling and storage. The storage of oil is in five tanks located in the basement. These tanks are used for the following kinds of oil: 1. car oil, capacity 500 galls.; 2. locomotive oil, capacity 500 galls.; 3. headlight oil, capacity 500 galls.; 4. valve oil, capacity 300 galls.; 5. signal oil, capacity 300 galls. The tanks are ¼ in. black steel plate, with all seams single lap, thoroughly riveted and caulked. Three of the tanks are 4½ ft. in diameter by 5¼ ft. high, and two are 3½ ft. in diameter by 5¼ ft. high, these dimensions being inside. All tanks have a 4 in. pipe connection at the top, which extends to the first floor, where fill boxes are set in concrete slab and have easily removable covers flush with floor, which, when taken up, and cap on end of 4 in. pipe is removed, allows of rolling a barrel over the filling box and filling the tanks by gravity. Connected to these 4 in. pipes, just above tanks, are 2 in. pipes, which extend through building wall to outside track along the platform, where they each have a stop cock and hose connection, thus providing a method of filling the storage tanks from cars. Each tank has a 1½ in. vent pipe extending 18 ins. above the roof. The tanks are set 1 ft. above the floor level on a concrete base, in which is a small trench under each tank to allow for a 1¼ in. drain pipe and waste cock at the front of the tank. At the north side of this room, under the platform, is a fireproof room partitioned off for the storage of waste.

A tank for gasoline storage, 3½ ft. in diameter and 5 ft. long, is located 20 ft. west of the building, and is buried in the ground below frost line, and encased with 6 ins. of concrete. The filler pipe projects from the ground directly above the tank and a 1½ in. suction pipe extends to pump in oil supply room. This tank is also equipped with a vent.

In the oil supply room on the first floor are located six Bowser self measuring, hand operated, oil pumps for the distribution of oil. These pumps are arranged along the west wall and are of the positive suction type, and have a 1½ in. suction pipe from tanks. Directly below nozzles of pumps are drip pans with 1½ in. return connections. In the northeast corner of this room is a 3 ft. 2 in. by 7 ft. door, by which entrance is gained to oil room from the outside. Just inside of this door is a counter at which requisitions for material from this room are filled. Under this counter are racks for storage of a day's supply of waste.

COAL DOCK: The coaling station is located at the west end of the cinder pit on the south side of the south track leading from the turntable. Parallel to the track the structure is 161½ ft. long, with a width averaging about 10 ft. The building is constructed entirely of timber, well over size to allow for deterioration, and all posts rest on concrete footings and are anchored to same with heavy steel plate straps. The delivery bins consist of 13 inclined bottom coal pockets, graduated in capacity so as to deliver a predetermined amount of coal to locomotive tenders, the respective pockets each being designed to hold the following amounts of coal, namely, two 2 tons; one 3 tons; two 4 tons; three 5 tons; two 6 tons; one 7 tons, and two 8 tons. The bins and framework are built of timber and heavy plank. Each pocket is equipped with an Ogle coal delivery gate and spout, which is claimed to be frostproof, and the spouts are so counterbalanced as to permit of easy operation by the fireman. The entire structure is covered with a wood sheathed roof and composition roofing. Only a limited storage capacity has been provided in the delivery bins, since the supply of coal for the winter months is purchased during the summer and stored on the ground just west of the coal dock, from which storage pile it is conveyed to the coal dock for locomotives in quantities to meet the daily demands.

The process of conveying coal from the storage pile to the delivery bins consists of three operations, namely: (1) The coal is loaded into one ton steel buckets, each provided with a bail, and the buckets placed at either end of the coal dock; (2) the buckets are hoisted to a trolley track, which extends longitudinally over the elevated delivery bins by means of a plain inverted pneumatic hoist, the hoist operating in conjunction with a jib crane so as to allow the bucket bail to be swung around and hooked on to a plain I beam trolley on the runway track; (3) the hoist is then released by the operator, who pushes the loaded bucket along the track, directly over the pocket to be filled, and by releasing an automatic catch on the bail the bucket empties its load and is afterwards conveyed back to the coal storage pile for refilling. The coal dock is provided with a semi housed shelter at each end to enclose the pneumatic hoists and jib cranes and to afford protection for the operator. A walk extends the entire length of the coal dock just over and at one side of the coal pockets. The pneumatic hoists and jib cranes have a capacity of four tons each at 80 lbs. air pressure and are of the Curtis & Co. Manufacturing Co.'s make.

THE CINDER PIT is located on the main tracks leading into the locomotive house, and about 400 ft. west of the latter. At present only one pit is built, with the depressed track in the centre between the two main tracks, which are 28 ft. centres. All pit walls are of concrete, with concrete base for vitrified paving brick floor. The cinder pit is 48 ft. long and approximately 10 ft. wide, and has a solid concrete wall under the outside rail of the track, forming bearing for same, and to which the rail is fastened with cast steel clips and anchor bolts set in concrete. Along the inside edge at the top of this wall is a steel curb angle to prevent chipping of the concrete. One inch below the top of this wall is the toe of a 45° face, sloping to the bottom of the pit, which is 3 ft. below the base of rail. The bottom is about 8 ft. wide, pitched just enough to drain to gutter and sewer connection, which runs parallel and adjacent to the concrete wall between the pit and the depressed track, of which the difference in height is approximately 3 ft. The inside rail is supported on cast iron standards, 6 ft. centres on concrete piers, an inverted rail being applied to the running rail, base to base, for reinforcing between standards. The clear height under rails to base of pit is about 2 ft. 8 ins., giving easy access to locomotive fire boxes.

The depressed track is 6½ ft. deep and level for about 48 ft. opposite the cinder pit, with a steep grade at the east end to act as a bumper, and a 6 per cent grade on the run in end. Reinforced concrete walls are used on both sides for the full length, with gutters of paved brick at each side of the bottom. The clear space between walls is 12 ft. and the track is centred on this. Provision is made for easily removing part of the north wall opposite present cinder pit for another pit at such a time as it is required. All corners of walls are strongly reinforced to prevent cracking. The depressed track is laid upon 6 ins. of cinders, and is drained to the gutters at sides, which are sloped to a sump covered with a cast iron grating connected to sewer. Water service is provided for use about the pits.

R. S. McCormick, M. Am. Soc. C.E.,
Chief Engineer, Algoma Central and Hudson Bay Ry., and Algoma Eastern Ry.

THE MACHINE SHOP EQUIPMENT consists of the following tools, most of which are new:

	Method of Driving.
[illegible] Driving wheel lathe	Individual motor
400-ton hydraulic wheel press	Belt
[illegible] Engine lathe	"
[illegible] Engine lathe	"
16 in. Engine lathe	"
16 in. Toolmaker's lathe	"
Pratt & Whitney turntable lathe	"
[illegible] Vertical boring mill	"
16 in. Crank shaper	"
18 in. Crank shaper	"
No. 2 Universal miller	"
66 in. Radial drill	"
[illegible] Vertical drill	"
12 in. Sensitive drill	"
Power hack saw	"
Twist drill grinder	"
Wet tool grinder	"
Pipe bending machine	Hand operated
48 in. Punch and shear	Individual motor
Plate bending rolls	" "
Ryerson, pit type, flue cleaning machine, capacity 500 2 in. tubes per hour	" "
Flanging clamps	Air
Flange forge	"
22 in. Lathe	Belt
22 in. Axle lathe	"
36 in. Planer	"
24 in. Shaper	"
Wheel boring machine	"
Wheel press	"
Radial drill	"
6 Spindle drill	"
3 Vertical drills	"
Triple bolt cutter	"
Pipe threader	"
Wet tool grinder	"
2 Emery wheels	"
12 in. Punch and shear	"
Bolt threader	"
Bulldozer	"
2 Bradley hammers	"
Flue cutter	"

Bolt furnace, case hardening and spring furnace,
Annealing furnace, flue welding furnace,
Blacksmith forges, oil rivet forge, flue welder,
Steam hammer, and one blast and exhaust fan.

The motors for driving the group lineshafts and individual tools are 220 volt, 60 cycle, alternating current, induction motors. Power is purchased from the Tagona Water and Light Co., whose hydro-electric plant is located not far from the shops. Two motor-driven air compressors are located in the southwest corner of the engine house, and compressed air outlets are located at convenient points throughout the machine shop and locomotive house. The line shafts are supported by drop hangers fastened to steel shafting supports of special design, clamped to lower chords of the steel roof trusses. The supports are built of standard rolled steel sections, easily fabricated, and permit of very simple alignment of shafts and hangers. The motors driving the line shafts are supported by brackets, some of which are mounted on the steel columns and some on the brick walls. These brackets are constructed of standard rolled steel sections, with a base of reinforced concrete for the motors to set upon. Pipe sleeves are set in the concrete for motor base bolts, which gives a solid anchoring and minimizes vibration.

FUEL OIL STORAGE: Two 30 by 4½ ft. diameter steel fuel oil tanks are located underground outside the east end of the machine shop, the latter end of which accommodates the blacksmith shop department. Oil can be unloaded by gravity direct from tank cars into the tanks. It again flows by gravity into a small delivery tank, from which it is forced to the burners by compressed air at 20 lbs. pressure. All of the tanks and piping are equipped with heating coils to prevent the sluggish flow of oil during cold weather.

LIGHTING SYSTEM: The buildings and yards are all well lighted. The engine house is lighted with flaming arc lamps, one to each space between engine pits and three over the turntable pit. The erecting portion of the machine shop is also lighted with flaming arc lamps. Clusters of tungsten lamps are used in the machine shop. The shop offices, toilet and locker rooms, and tool room, are lighted with carbon filament lamps, and tungsten lamps are used in the store house and offices. All power, light and water is supplied by the Tagona Water and Light Co., one of the Lake Superior Corporation's subsidiary companies.

EXTENSION TO BRUCE STREET: The extension of the main line to Bruce St. involves an undercrossing of the C.P.R. Sault Ste. Marie branch, where excavation was made through part rock. This excavation, including the concrete abutments, was done by contract by the H. E. Talbott Co. of Sault Ste. Marie. A half deck girder span, 25 ft. long, spans the opening carrying the C.P.R. track over the A.C. and H.B.R., at this point. There is a full clearance of 22½ ft. from base of rail to under side of the girders. This extension is 1¼ miles long to the site of the terminal station at Bruce St. and lies along the water front of the St. Marys river.

THE TERMINAL STATION AND general office building is located on Bay St. at the foot of Bruce St., the center line of the building being on the east line of Bruce St., locating the main entrance into the station directly across Bruce St. It is a thoroughly modern and substantial structure, 46 by 150 ft., with three stories, a small basement, and a loft under its pitched roof; and, with the exception of the roof framing, the building will be fireproof. Construction was begun on April 21, 1912.

On the ground floor is located the general waiting room and ticket office, women's retiring room, men's smoking room, express room, separate entrance hall (giving access to the offices by ample stairway, and by provision for an elevator), and the baggage room. Along the street side, the floor of the baggage room is 3½ ft. higher than its main floor. The two elevations are connected by an inclined runway, but in addition baggage can be delivered directly from trucks to the high elevation and from there directly into drays at the elevation of the wagon box. The second floor provides space for the General Manager's general and private offices, the Traffic Manager's general and private offices, the Superintendent's general and private offices, the Auditor's general and private offices, the Car Accountant's office and the Train Dispatcher's office. On the third floor will be located the Chief Engineer's general and private offices, offices of the Bridge Engineer, the Engineer of Maintenance of Way, the office engineers, draughting room and Chief Draughtsman's office, plan room, blueprint room and store room. Lavatories are provided on all floors.

The footings are of concrete and were carried to rock below the elevation of the river. The foundation walls from the footing to grade are of rubble, 2 ft. thick. The walls of the building are of hard native sandstone from the Root River Quarry, grading in color from grey to red brown. From the water table to the first story sill course, the walls are of rock faced coursed masonry. Above this line, rock faced, hammered ashlar work is being used. The first story walls are 20 ins. thick, second story 18 ins., and third, 16 ins. The cut stone trim is of red Portage Entry sandstone, from Houghton, Mich., and blends well with the native sandstone. The trim consists of water table, sill course, flat and arched lintels of first story doors and windows, a heavy belt course at the level of the second floor; sills, lintels and corbels of the second floor, and sills and lintel course of the third floor. The walls are surmounted by a heavy copper cornice and gutter, and the building will be covered by a pitched roof of Vermont variegated green and purple slate. A hipped roof marquise covers the main entrance opposite Bruce St. Provision has been made for train sheds of the umbrella type, to be built in the near future.

The structural supports of the interior of the building are two rows of seven steel columns, on concrete piers carried to rock foundation, and one additional column in the panel containing the elevator shaft and stair hall, forming 24 bays; 16 of approximately 16 by 20 ft. along the sides of the building and carrying the offices, and 8 of approximately 9½ by 20 ft. down the middle of the building and carrying the corridors. I beams form the girders between columns, and between the end columns and the masonry walls. The second, third and loft floors are of reinforced concrete and tile, of the type known as the Johnson system. The first floor is of concrete throughout, resting directly on the fill, except the portion over the basement, which is reinforced.

The building will be heated with steam and the mains will run from the basement, where the boilers are located, through tunnels under the first floor. The building will be electric lighted. Conduits are carried from floor to floor through a wiring duct, with distribution closets at each floor, and the circuits for any one floor are carried in conduits laid in the concrete of the floor above. All partitions are of hollow tile and are plastered. Exterior walls are plastered on metal lath carried by metal furring. Stairs are of steel. Floors of entire first floor and of corridors and lavatories of second and third floors are of granolithic finish. Remaining floors in building are of maple or rough sheathing and sleepers, anchored in concrete. The general interior trim is red oak.

The present concrete train platforms will extend 100 ft. each way from the station, giving a total length of 350 ft. Walks will extend along the east side and front. The space at the west end of the station for 60 ft. out will be paved.

All outside work, including grading, tracks, etc., is being done by the company's forces. Plans for this building were made by the Arnold Co., and the McPhail & Wright Construction Co. are the contractors.

THE FREIGHT HOUSE is a frame building on solid concrete walls and piers, covered with corrugated iron and a prepared felt roof. It is 32 by 112 ft., with an office in the east end, and was built by the McPhail & Wright Co. on plans furnished by the railway company.

All the above work is being carried on under the writer's general charge as Chief Engineer, with J. A. Hedgcock in direct charge of the forces. L. B. Wulff, as Superintendent for the Arnold Co., in charge of their part of the work, and H. H. Dickinson, Engineer in charge of this work at the Chicago office, have rendered excellent service to the railway company. The writer is indebted to Mr. Dickinson for the above description of the terminal buildings. All outside work is being rapidly completed, and the inside work at the shops and station buildings will run into the winter. The Mechanical Department took possession of the Locomotive House on Dec. 1, and has been using it regularly since.

In addition to the above terminal work, the railway company is considering the construction of a modern coal dock with unloading machinery and storage capacity at this point. A similar dock is also planned for Michipicoten Harbor and Little Current.

Maintenance of Way by Contract.

The article on this subject in Canadian Railway and Marine World for October, pg. 507, and the extract from a railway official's letter published in the November issue, pg. 559, have aroused considerable interest among maintenance of way officials. The following contribution from J. B. Cameron, Somerset, Pa., will also be read with interest:

This subject has received more or less consideration from maintenance of way officials for several years without any railway of prominence as yet adopting the system; but such failure does not in any way indicate that a system of contracting would not result in increased efficiency and decreased costs, both of benefit to the railways.

Efficiency is the slogan of the day in all branches of railroading and especially in the maintenance of way department. Wages have increased, but the efficiency of the worker has not kept pace with them. It is one of the [illegible] and this is to be expected since the problem of labor depends entirely on the economic law of supply and demand, and a large demand results in small supply, increased wages and increased indifference on the part of the laborer.

If increase in wages will not result in increased efficiency it is apparent that any other scheme offering even a suggestion of improvement is worthy of careful consideration.

There are but two methods, the writer believes, that will increase the efficiency of the worker and they are, first, by awakening an interest in the laborer for his work, and second, by increased efficiency in supervision. Either scheme is in its elements a contract scheme, for to awaken in any laborer an interest in his work can only be accomplished by making his earnings depend on results and not on a fixed amount per diem. Thus the laborer becomes in a measure a contractor, and increased efficiency in supervision can in a similar manner be best obtained by making the cost to the railway company depend on results and not on a fixed daily wage.

To contract for work it is necessary to have unit costs on which to base payment for same, but a just basis for such payments can only be arrived at after careful study and investigation. There are many classes of work that have been thus standardized, and in railway maintenance work any material increase in the efficiency of the worker will only result after such a standardization as will insure to the laborer adequate compensation for a fair day's work.

The writer does not believe the method of awarding contracts for such work to a large contractor to be desirable at present, but he does believe in treating each foreman as a contractor in some such fashion, as is done by certain large industrial concerns. Men will do more work for the same individual as a contractor than they will do for him as a foreman of a railway company. As a contractor the foreman could therefore do work cheaper than he could as a foreman, providing he gave the work the same efficient supervision in each case.

Some people will claim that a poorer grade of work would result from such an arrangement, as the contractor, in order to obtain larger profits, would be satisfied with a poorer grade of work. This might well be answered, however, by considering the results obtained by the contract system on construction work.—Engineering Record.

The Alaskan Railroad Commission, after having completed an extensive tour through the territory, spent some time recently in Ottawa, Ont., investigating the methods of building railways in the northern regions and the Government attitude thereto, before returning to Washington to prepare a report.

W. M. PORTEOUS, Agent, Canadian Pacific Ry., Freight Department, St. Louis, Mo., in remitting renewal subscription, writes: "I might state that I enjoy reading Canadian Railway and Marine World very much, as it is the only reliable means of information regarding Canadian railway matters in general which I receive."

The Interstate Commerce Commission recently dismissed the Humboldt Steamship Co.'s application for the establishment of through routes and joint rates, with the White Pass and Yukon Route, between Seattle, Wash., and Dawson, Yukon, and other Canadian points, on the ground that it had no jurisdiction over a company located, owned and operated in a foreign country.

Classification and Percentage Rating of Canadian Northern Railway Locomotives.

Canadian Railway and Marine World readers who in the course of their daily pursuits come across Canadian Northern Ry. locomotives, will latterly have noticed a considerable change in outward appearance, and many will probably be at a loss to locate the nature of the change which has taken place. The change referred to is that of the manner of classifying and rating of locomotives and the means by which this information is concisely arranged in a convenient location on the sides of the locomotive.

The fact of the matter is that the C.N.R. has felt for some time that it has outgrown its swaddling clothes, and become a large system, the growth being rather marked for its rapidity. Becoming a system, the various details that go towards its makeup must in consequence become systematized likewise, and not be left in the haphazard manner that would be successful on a small line, but which would not be economical on a large system such as the C.N.R.

Until recently, there was no accepted method of classifying and rating locomotives on the system. An attempt at introducing some standard of comparison among the locomotives then in use, was introduced on the system several years ago, the basis of comparison being an order of 10 wheelers just then being delivered from the builders, and which were the largest then in use on the system. These locomotives had a tractive effort at the drivers of about 23,600 lbs., and from the fact that they were the largest in use, were considered as 100% locomotives. Having an odd number of pounds such as 23,600 as the unit of comparison, naturally led to considerable confusion in the rating of other existing locomotives from this basis, as while it was a simple matter to determine the percentage by a simple calculation, the percentage thus arrived at conveyed but little meaning, the unit being so unusual. That is to say, given a locomotive with maybe a rating of 70%, a calculation beyond the scope of the average person's powers of mental arithmetic would have to be made to ascertain the tractive effort that the locomotive would develop, resort being made to pencil and paper to determine the desired information.

The system of classification and percentage rating at present in use, and to be here described, was developed recently by S. J. Hungerford, Superintendent of Rolling Stock. Not only is it being applied to the C.N.R. locomotives, but also to the locomotives of all the Mackenzie-Mann interests in Canada and the United States. Realizing the failings of several of the different systems of rating, principally from the fact that some arbitrary unit has been selected as a standard, for which no logical reason can be given, consideration was given to the selection of a base that would be within the realm of logic. As in most other systems, the tractive effort has been taken as the ground work of rating. The question was to determine the unit of comparison. Tractive effort is usually measured in even thousands of pounds, hence the selection by Mr. Hungerford of 1,000 lbs. tractive effort as being a 1% rating. A locomotive with a tractive effort of 28,000 lbs. is in this C.N.R. rating a 28% locomotive, and this is the rating of the latest 10 wheel passenger locomotives on the system.

The classification scheme developed has necessitated the renumbering of nearly all the motive power. Previously, as each new batch of locomotives was received from the builders, they were given the series of numbers above the last lot of locomotives numbered, this scheme using up the numbers in properly ascending numbers, but without any system as regards the allocating of the different types of locomotives to any particular run of numbers. With but few exceptions, it was impossible to refer to any particular type of locomotive as say the "600 class." In the new scheme, certain runs of numbers are given to different types of locomotives, the number in each run depending as far as possible on the relative quantities of that particular type at present in use, with due regard to contemplated future additions to that particular type. That is a matter of pure conjecture, as new types are constantly being introduced, though, at the same time, it will be observed that there are certain general lines that appear to have become more or less standard—such for example as the 6 wheel switcher, the 10 wheeler, and the consolidation. The allocation of numbers is as follows:

Number	Type.
1 to 99	4-4-0 American
[illegible] to 199	2-6-0 Mogul
[illegible] to [illegible]	0-8-0 Switcher
[illegible] to 699	0-4-0 and 0-6-0 Switchers
[illegible] to [illegible]	4-6-2 Pacific
[illegible] to 1999	4-6-0 Ten Wheeler
[illegible] to [illegible]	2-8-0 Consolidation
[illegible] to ——	Mallet

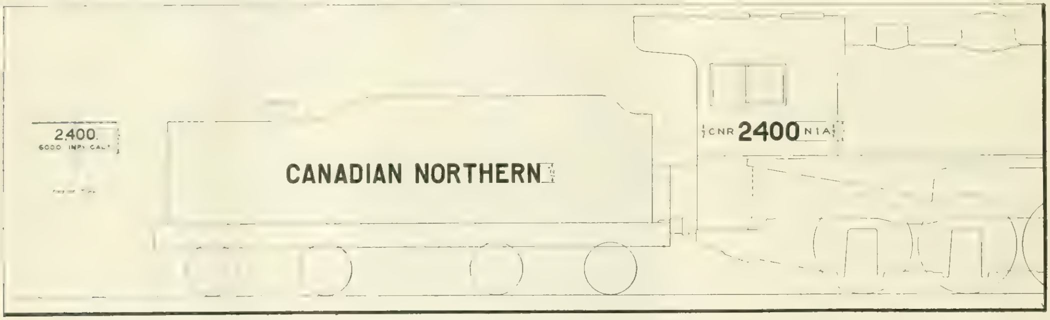
This provides for over 3,000 locomotives, giving the larger groups to 6 wheel switchers, Pacifics, 10 wheelers and consolidations. It is estimated that this arrangement will provide ample room for expansion for many years to come, as the number of railways operating over 3,000 locomotives is very few.

The planning of a system of locomotive classification involved different considerations. There is first of all the general type system of classification universally adopted, such as Pacific, consolidation, etc. The best basis of subdivision of these types was considered to be on the diameter of driving wheels, the locomotives of a certain type between given limits of driving wheel diameter are given a certain type symbol letter; for example, consolidation locomotives with driving wheels over 52 ins. diameter but under 58 ins. diameter, have the type symbol "M." This is the type of locomotives until recently in general use for freight, but they have been superseded by locomotives of a larger type, in the next or "N" group, for the heavier main line work. The general arrangement of type symbols is as follows:

Type Symbol Outside Diameter of Drivers
Wheel Arrangement, 4-4-0 (Standard).
A.........63 ins. or less.
B.........70 ins. or less, but over 63 ins.
Wheel Arrangement, 2-6-0 (Mogul).
C.........52 ins. or less.
D.........58 ins. or less, but over 52 ins.
E.........63 ins. or less, but over 58 ins.
Wheel Arrangement, 4-6-0 (Ten Wheel).
F.........52 ins. or less
G.........58 ins. or less, but over 52 ins.
H.........63 ins. or less, but over 58 ins.
I.........70 ins. or less, but over 63 ins.
Wheel Arrangement, 4-6-2 (Pacific).
J.........70 ins. or less.
K.........75 ins. or less, but over 70 ins.
Wheel Arrangement, 2-8-0 (Consolidation).
L.........52 ins. or less.
M.........58 ins. or less, but over 52 ins.
N.........63 ins. or less, but over 58 ins.
Wheel Arrangement, 0-6-0 (Switch).
O.........52 ins. or less.
Wheel Arrangement, 0-8-0 (Switch).
P.........52 ins. or less.
Wheel Arrangement, Mallet Articulated.
Q.........52 ins. or less.
R.........58 ins. or less, but over 52 ins.
Wheel Arrangement, 0-4-0 (Switch).
S.........58 ins. or less.

While it is possible, under the grouping of numbers before referred to, to roughly classify the locomotives, the object of this classification with type symbols, is to make it possible to refer to any locomotive by its type symbol, as the type symbol conveys concisely the locomotive type and its general size, as in each type, the size is more or less proportional to the driving wheel diameters.

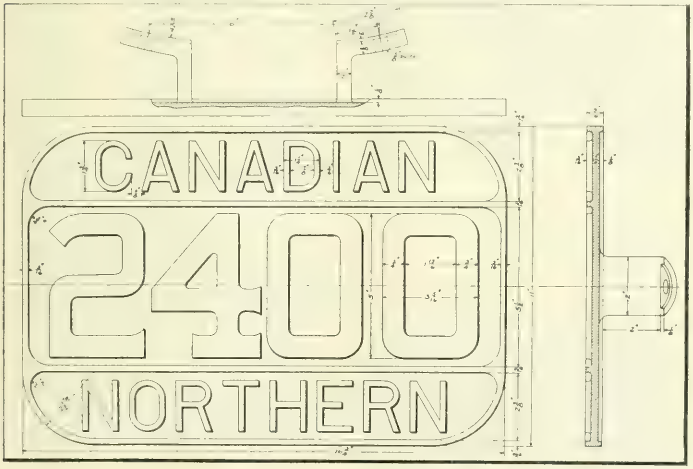
The type symbols are further subdivided into groups, symbolized by numerals, and sub-groups, symbolized by small letters. In each type symbol group, there are often several designs that are considerably different from each other, as for example when the same specifications are worked out independently by different builders. Now, any one of these different designs, if built again on a further order, might be slightly altered from the original and so could not



Standard Lettering and Numbering, Canadian Northern Railway Locomotives.

be included in the group designated by the numeral. Thus, in group M, there are say three different designs, 1, 2 and 3. Being the first of the group, there would be no subdesigns, so each group would have the subletter a. The first batches of the three designs would be designated respectively, M-1-a, M-2-a, and M-3-a. Now, suppose it was found that one of these designs was better than the other two, and it was decided to perpetuate that type with slight modifications, the next design would be given the subletter b. Thus, the next one in group 2 would be M-2-b. In some of the different groups, there are a great number of designs, running up to 16 in the G portion of the 10 wheeler group. The subgroups do not run as high, the highest being g in the H-6 class, the type of larger size 28% 10 wheelers that is being perpetuated for heavy passenger service.

The renumbering of the locomotives was made the occasion of the general change in the character of labelling the locomotives, the nature of which is shown in the accompanying two illustrations. Instead of printing the words "Canadian Northern" along the side of the cab as formerly, in the centre of the space the number of the locomotive is painted in letters 12 ins. deep, and to the left of the number, in letters 4 ins. deep, there is painted "C.N.R.," and on the opposite side to this, the classification of the locomotive, as for instance the one shown, the "N-1-a" class. The locomotive is further labelled on the smokebox door by a projecting brass plate 11 ins. deep and 16¾ ins. wide, on which the legend stands out in raised brass letters, the surface of which is buffed, and the background painted black. Along the top, in letters 1¾ in. high, is the word "Canadian," with the word "Northern" in corresponding letters along the bottom. Between the two words, in figures 5 ins. high, is the number of the locomotive, as instanced in the illustration, "2400." The top sides of the headlight have the number also in letters, cut out of tin, 4 ins. high, with corresponding letters of the same height in the top front of the headlight, above the glazing.



Standard Front End Number Plate.

The locomotive number formerly graced the sides of the tenders, but owing to the exigencies of the service sometimes requiring that the tenders be interchanged temporarily, (made possible by the standard type of tender used), it was deemed inadvisable to continue the practice of so locating the number. The present practice is to have the words "Canadian Northern" painted along that space in block letters 12 ins. high, utilizing to advantage a fine stretch of advertising space. The number of the locomotive is painted in letters 6 ins. high near the top of the rear end of the tender, in a place that would not be conspicuous in the event of a tender interchange. Below the number are letters 3 ins. high, giving the capacity in imperial gallons. All painted lettering on both locomotive and tender is in the company's standard golden yellow.

This policy of classifying and rating locomotives has been generally adopted all over the Mackenzie Mann lines. With slight modifications, the standard lettering and numbering has also been adopted on the other lines, the modifications for the most part occurring through the difference in names. This standard method of classifying and rating, involving the scheme of renumbering in a standerd manner, was only introduced during the past year.

Oil and Paint House of Grand Trunk Railway Port Huron Shops.

The oil and paint house of the G.T.R. car shops at Port Huron, Mich., labors under peculiar difficulties, from the fact that it does not possess an up to date equipment with self measuring oil tanks and automatic paint mixers such as are to be found in many recently constructed plants, or in old plants where a modern equipment has been introduced. Lacking these modern adjuncts of a well planned oil and paint shop, J. L. Hodgson, the Master Car Builder, was compelled to make shift with such facilities as could be readily improvised. Just how good a substitute for a modern installation he has been able to introduce will be seen from the ensuing description, and doubtless all will agree that a splendid means for handling the large quantities of oil and paint used in such a plant has been planned.

The oil and paint house is about 60 by 30 ft., parallel to the river, on to which it backs. All the buildings of the plant are located parallel to the St. Clair river. A partition wall the length of the building divides off the rear third of it, this portion being used as a rough store room for the paint and oil products, and is entered by doors from either end. The front two thirds of the building, facing across the rear of the freight car shops, is divided into three rooms, about 10, 20 and 30 ft. long, respectively. The 10 ft. room is used for a store for the finer paint and oil products, the central or 20 ft. end for a paint-mixing and distributing room, and the long room for the oil storage tanks. These rooms communicate with each other through end doors, and each has an entrance from the outside, the middle one through the front wall and the outer ones through the end walls.

The oil room at the northerly end of the building is the longest of the three front rooms. In it there are three rows of tanks as in figs. 1 and 2, one row as in fig. 1, down the rear wall of the room, and the other two back to back down the centre as in fig. 2. There are 16 tanks, ranging in size from 2½ to 25 barrels capacity each. They are all labelled with the oil contained, and have drawing off faucets near the bottom. the sides and bottom sloping to this point so as to completely drain the tank when necessary, an operation that is performed periodically, the interior being thoroughly cleaned out at the same time by washing.

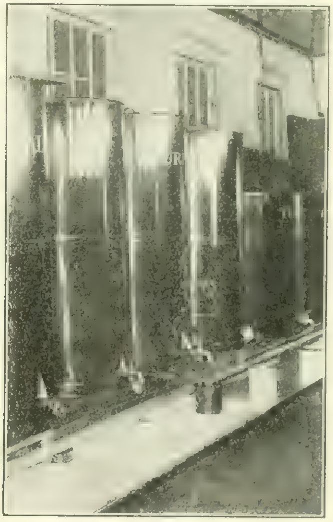


Fig. 1.—Oil Storage Tanks.

The tanks are all raised a few inches from the ground, on platforms. Below the platforms, on the floor, there is a drainage trough, with perforated stands on which the receptacle to be filled is placed. Beneath each of the faucets there is a drip can, which is always placed to one side when filling a can, and then replaced immediately afterwards, keeping the surface of the drain trough free from sticky oils and similar dirt. The reader will notice how clean and tidy the whole place appears, and it may be mentioned that the illustrations were made from photographs taken as it appeared under normal operating conditions, with no previous preparation to make it presentable. All the tanks are painted dark red, and are varnished over top. The drain troughs are painted white. Both tanks and trough are repainted at frequent intervals, and in consequence always present a neat appearance. Along in front of each of the troughs there is a strip of car aisle carpet, further improving the interior finish of the room. The walls are painted white above the tanks, and below this level black. This room has an upstairs where all the car stencils are cut out. This is the only portion two stories high. The ceiling of the lower room is finished in natural wood, varnished.

The oil tanks are filled in a novel manner, as indicated in fig. 2. The barrel to be emptied is brought in from the storage pile at the oil room end of the building through the door to the rear, and rolled up on to the shallow stand shown, where it is located, bung uppermost, by two wedges. In this position, the oil emptying apparatus is applied. An air connection from the left, carrying a gauge, connects to the side of a header that has a tapered threaded lower end that screws into the bung hole. This air connection leads into an annular space around the inside of the header. Down through the centre of the header there is a long sleeve, making the inner surface of the annular air space. Through this sleeve there is a length of pipe, making a fairly snug joint, but which is removable. This pipe is notched at its lower end, providing radiating channels through which the oil is free to enter. The air pressure on the top of the oil from the annular air space of the header forces the oil downwards, and up through the central pipe, which has a hose connection to the top of the barrel to be filled. All the attendant has to do is to turn on the air pressure, the barrel automatically draining itself, and when convenient to the attendant, he can turn it off, remove, and replace with another barrel. The operation is much simpler than it would be if a hand pump were used. Along the front wall of this oil room, there is a bench for repair work, etc., one end being separated for the oil room attendant's desk.

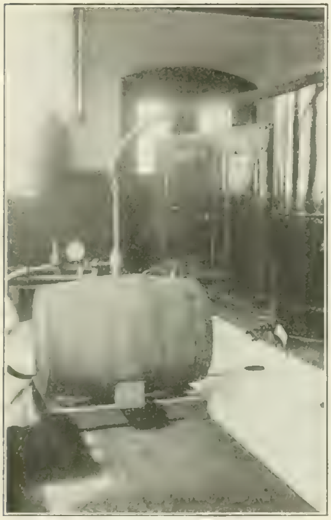


Fig. 2.—Filling Oil Storage Tanks.

The middle room is used for mixing, the tanks for this purpose being ranged along the rear wall as shown in fig. 3. These are simply large vats, each containing an air connection from the air pipe along the wall about 4 ft. above the vats. A jet of air bubbling up through the paint ingredients thoroughly mixes them. The ingredients are dumped in from the receptacles in which they arrive, in the proper proportions, and require no hand mixing. The amount of mixing required from this plant latterly has not been as great as heretofore, as liquid stocks are coming into more general use for the making of the paints, instead of powder. The mixed paints are drawn off from the bottom through faucets, as in the oil tanks, there being a painted drip trough below as in the former instance.

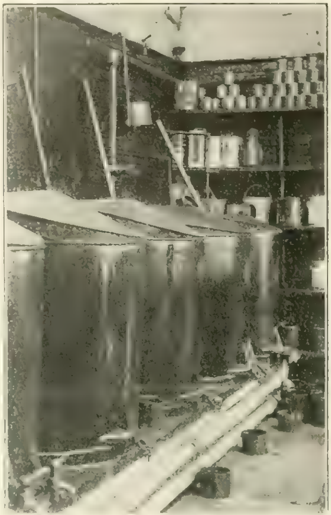


Fig. 3.—Paint Mixing Tanks.

Immediately in front of this row of mixing tanks there is a counter, carrying smaller mixing pots, and a paint stock pulverizer. This is immediately to the right of the central path through the oil house shown in the foreground in fig. 4. To the left in this illustration is the serving counter where the workmen receive their stock of paint and supplies. The serving portion of the room is entered from a door in the wall to the left. In the bins under this counter, there is kept the stock of white lead, powder, etc., each bin carrying a different product.

Fig. 5.—Workmen's Tool Record.

The system of keeping tab on all the tools issued from the oil and paint house centres on the tally board shown in fig. 5, located through the doorway as shown in fig. 4, on the end of the central rows of oil tanks in the oil room. This board is divided horizontally and vertically into blocks. Down the first column, there is a list of numbers, one for each of the painters on the payroll. At the head of each of the other columns, there is the name of the tool or tools issued, as for example, chamois, sponges, scrub brushes, paint cans, etc., every requirement of the men that it is possible to draw from stores being there recorded. Each morning, the painter is required to draw the supplies that will be required during the day, and in the block representing his number and the article drawn, there is inserted a peg in one of the four holes provided. If more than one of that particular article is drawn, a corresponding number of pegs is inserted in the block. Thus, 638 has drawn 1 chamois, 2 sponges, 2 scrub brushes, and water buckets. The supplies thus drawn at the beginning of the day must be returned the same night, leaving nothing of value that could be carried away lying around the shops. Ten minutes is allotted morning and night for this purpose. These supplies are kept in pigeon holes in the front of the counter to the rear of the serving counter.

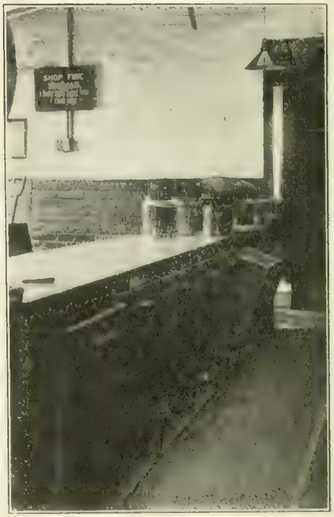


Fig. 4 Serving Counter and Stock Bins.

In the smallest room at the end opposite to the oil room, the rough stores that are in constant demand are kept. This is the only room of the lot that is not kept in a perfect condition at all times, but from the nature of the contents, and from the fact that considerable of the hand mixing is done there, it is impossible to keep it in the same condition as the other rooms.

In another building to the south of this end the inflammable materials, such as gasoline, are stored. This building is of concrete throughout, with vent holes a few feet above the ground. A division wall separates the building into two portions, the northern being for the purpose mentioned, and the southern being used for the storage of car stencils, which from their oily nature are very inflammable.

The whole oil and paint storage plant, considering the piecemeal evolution, is very complete, and handles the conditions admirably. The whole thing is handled by a single oil house man, showing the methodical manner in which it is laid out to make such a thing possible.

Railway Mechanical Methods and Devices.

Improved Link Motion Arrangement.

By M. Mahoney, Canadian Northern Quebec Railway, Joliette, Que.

It is often found necessary to redesign link motions to get away from the springing of the parts, inherent in the older designs. Where transmission bars are used, they have invariably to be set to clear the leading axle in connecting the link with the forward rocker. One arm of the forward rocker is usually set so that the transmission bar centre line, by means of pins, makes a 90 degree angle with the rocker arm, the object being to correct the distortion due to the angle the transmission bar makes with the motion centre line.

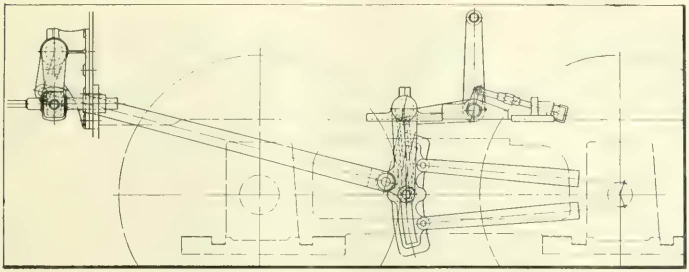


Fig. 1.—Proposed New Construction of Link Motion.

The gear arrangement shown in figs. 1 and 2 is a proposed redesign of an old gear. The diagrammatic view, fig. 2, shows the usual offset arm on the forward rocker, and a corresponding offset on the link rocker, imparting to the transmission bar a motion always parallel. The distortion in the angle of the transmission bar is thus corrected at both ends, instead of the usual correction at one end only. By doing this, a straight transmission bar is obtained, as by a combination of rocker arm lengths, the bar can be placed high enough to clear the forward axle without giving it any offset. An additional advantage lies in the fact that the usual long pin from the link block, providing bearing length for the rocker arm end and the transmission bar end, is shortened. Under this arrangement the transmission bar is attached to the link block pin in the manner indicated in fig. 1. The writer believes this construction is decidedly better than the usual transmission bar arrangement.

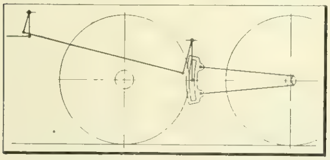


Fig. 2.—Diagrammatic View of New Construction.

Tests on driving spikes in bored holes of treated ties, show that the point should be tapered on four sides to drive centrally. The holding power is slightly decreased by boring before treating, and while the tie is more thoroughly permeated, the condition of the fibre to withstand splitting and crushing is not as good.

Drilling Retaining Rings at the Grand Trunk Railway Port Huron Shops.

In the machine shop at the G.T.R. car shops at Port Huron, Mich., one of the machines missed most is a radial drill, one of which they lack. In consequence, where it would be the practice in a great many places to do certain jobs on the radial, in these shops the upright drill must be used, and to make this possible, a great many different ingenious methods have had to be improvised to handle the work to the best advantage. Among these is the matter of drilling passenger car wheel centre and retaining ring bolt holes.

The jig used is shown in the accompanying illustration. On a heavy piece of plate, there is secured at a central point in the width a vertical pin. At four points equidistant from this centre, and radial thereto, are rollers, set into the surface of the plate to form a bearing for a wheel centre mounted on the plate. The left end of the plate is clamped to the drill table.

The wheel centre to be drilled is mounted on the plate over the central pin, resting on the four rollers. Over the pin to centre the wheel centre, there is slipped a tapered wooden plug, which bears out on the sides of the axle bore. On top of the wheel centre rim is placed a drilling jig. The table is swung around so that the drill spindle is over the left edge of the wheel centre, in which position the holes are drilled.

Jig for Drilling Retaining Rings on the Vertical Drill Press.

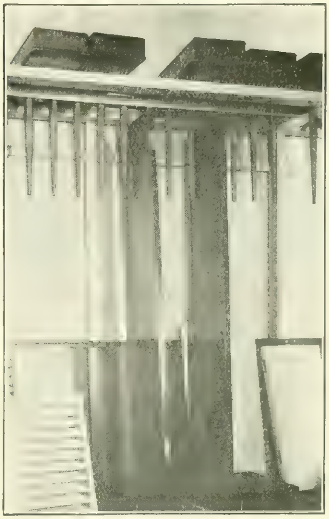
The same attachment is used for drilling the retaining rings. On the same pin centre, there is mounted a wooden ring frame, which centralizes the retaining ring, when the holes can be drilled to mate the wheel centre by the use of the drilling jig.

Using the vertical drill in this manner, it is claimed that equally rapid work can be performed as with a radial drill on the same kind of work. With a radial, the swinging arm must be changed in position each time, while with this attachment, the operator merely has to swing the centre or ring around on the roller bearings.

Varnished Door Drying Rack at Grand Trunk Railway Port Huron Shops.

In the G.T.R. shops at Port Huron, Mich., there is in use a rack for drying freshly varnished car doors in the varnishing room, that would appear to be a material improvement on existing practice.

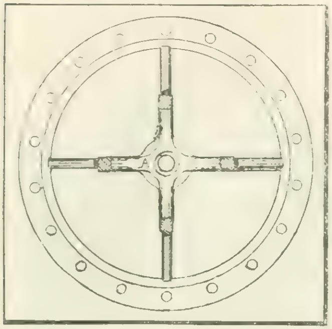
Projecting downward from a scantling located about a foot out from the wall, and at a spacing of about 4 ins., are tapered hardwood pins, the larger end in the scantling and the smaller end at the bottom. The object in such a construction is at once apparent. The freshly varnished doors, when placed in between these projecting tapered pins, can only have point contact with the pins at the top edge of the door, from the fact that each side of a pin presents a sloping surface, contact along which is impossible unless the bottom of the door be set over at a large angle. If stood upright, marring of the surface would be impossible. The door storage space in these varnish shops is quite considerable, two sides of the room being provided with racks of this type.



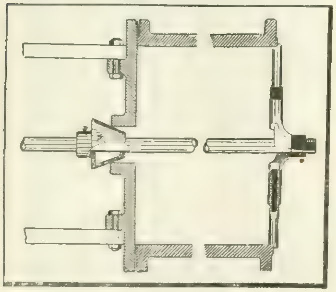
Rack for Drying Freshly Varnished Doors.

Setting Guides and Crossheads at the C.P.R. Montreal Shops.

The accompanying plans show a home made device for quick use in setting locomotive crosshead guide bars. A is the centre expander adjusted in the cylinder centre in the front end of cylinder, and can be readily proved to be in the centre by calipers or otherwise. B shows a tapering attachment, or cone, pressed as far as possible into the stuffing box in back end of cylinder. If the stuffing box is clean the cone is unerring in regard to the exact central position, and no time need be spent in further proof of the exact central location of the extending shaft. As is well known, a string is not only difficult of adjustment, but its flexibility is an abiding drawback to its reliability. With the device described, the best results may be obtained both in the perpendicular and horizontal adjustment of the guide bars. The dimensions of the parts of the device, of course, may be such as are readily adaptable to the sizes of the cylinders, but adjustable threaded ends on the front end appliance may readily give a range varying in several inches of diameters of cylinders.—J. G. Koppell, in Railway and Locomotive Engineering.



Cylinder Centring Device.



Centre Expander in Cylinder.

Reward for Automatic Train Stop.—A reward of $10,000 has been offered by the New York, New Haven & Hartford Rd., to the first inventor of "an automatic device that will safely arrest an express steam locomotive that has passed danger signals; the test of efficiency to be its adoption within 1913, 1914 or 1915, by the New Haven, the New York Central, or the Pennsylvania lines, and its approval or recommendation by the Interstate Commerce Commissioners."

Grinding in Air Brake Valve Seats at Grand Trunk Railway London Shops.

The accompanying illustration shows a simple outfit for grinding air brake valve seats, a method employed in the air brake department of the G.T.R. car shops at London, Ont. On the end of one of the benches there is rigged up a vertical support to which is attached an air motor, the spindle of which is fitted to carry the valve that is to be ground to the valve seat. The casting containing the valve seat is held under the revolving spindle by the operator, who moves it up to and away from the valve intermittently, to grind a good seat. Only the smaller valves are ground in, in this manner, a larger machine, specially designed, being employed for the larger sizes.

The air connection comes from the pipe above, and along the horizontal piping over the top of the motor, entering through the handle from the left. The twisting handle valve is not employed, as it has been found to close from the vibration of the machine when the operator is attending to the grinding. This valve is blocked open, and an air cock introduced, to be opened and closed without trouble from shifting.

Stand for Grinding in Air Brake Valve Seats.

The pipe in the right foreground has a short connection near the level of the table for the testing of angle cocks for leakage, etc. On the other side of the table, in the left background, the pipe terminates in a small pet cock, used for cleaning dirty valves, etc., by blowing a blast of air through.

Station and Other Buildings on the National Transcontinental Railway.

Contracts were let by the National Transcontinental Railway Commission during the past year, for the building of 59 station buildings of design A; three stations of design D; four ice houses, four store houses, three freight houses, three trainmen's houses, 59 tool houses, no 1; four tool houses, no. 2, and 59 coal boxes. The location of these several buildings is as follows:—

Section 13, district A.—Ice house, store house, no. 1 tool house. Sec. 14, district B. —11 design A station, 10 of which are to be fitted for bunks; 11 no. 1 tool houses and 11 coal boxes. Sec. 15, district B.—5 design A stations fitted for bunks; 1 design B station; ice house, store house, freight house, trainmen's house, 5 no. 1 tool houses and 5 coal boxes. Sec. 16, district D.—10 design A station fitted with bunks, 10 no. 1 tool houses and 10 coal boxes. Sec. 17, district E.—25 design A stations, 18 to be fitted with bunks; 2 design A stations, two ice houses, two storehouses, two freight houses, two trainmen's houses, 27 no. 1 tool houses, 2 no. 2 tool houses, and 25 coal boxes. Sec. 18, district F.—8 design A stations, 6 being fitted for bunks; 5 no. 1 tool houses, 2 no. 2 tool houses, and 8 coal boxes.

Following are some details of each of these buildings:—

DESIGN A STATION BUILDING.—This is a 1½ story frame building, on concrete foundations, and without cellar, 51½ by 16 ft. outside dimensions, with a kitchen to the rear, 14½ by 12 ft. On the ground floor of the main building are:—waiting room, office, living room, agent's bedroom, and baggage room. This latter is in some cases to be used as a bunk room. The upper floor has three bedrooms, reached by a stairway from the kitchen. Stoves are used for heating.

DESIGN D STATION BUILDING.—This building is used only at divisional points, and is a full two story frame building 130½ by 30 ft., on concrete foundations, and with concrete cellar. On the ground floor are:—lunch room and kitchen, general waiting room, women's waiting room, office, conductors' and trainmen's room, baggage room and lavatories. On the upper floor are 10 office rooms and toilet room. The building is heated by steam, lighted by electricity, and finished inside with plastered wall and hardwood trim in natural wood finish.

ICE HOUSE.—This is of wood, resting on sills and having double walls, the spaces being filled with sawdust. Dimensions, 59 by 24 ft. outside measurements. Capacity, 600 tons.

STORE HOUSE.—This is a one story brick building with concrete foundations and basement, and concrete oil storage room at the end. The dimensions over all are 74½ ft. by 20 ft. 2 in., the oil storage having accommodation for 10 oil tanks. The store house proper has a tar and gravel roof, and the oil storage a concrete roof. The building is fitted with steam heating and electric light.

FREIGHT HOUSE.—A one story frame building supported on piles, dimensions 60 by 28 ft., and consisting of an office, perishable freight room and freight storage room. The roof is of tar and gravel; the outside walls are battened, and the freight room walls are covered inside to a height of 5 ft. with 1½ in. plank. It is electrically lighted, and heated by stoves, storage for coal being provided in a bin underneath.

TRAINMEN'S HOUSE. This is a two story frame building, 37 ft. 4 in. by 39 ft. outside dimensions, on concrete foundations, with concrete basement, and tar and gravel roof. The basement contains furnace room, for heating the building, wash rooms, lavatories and dressing room, fitted with shower baths and basins with hot and cold water attachments. On the ground floor is a recreation room, a living room and two bedrooms, while on the upper floor are 20 bunk rooms with lavatories and closets. There is a two story verandah at the front, supported on concrete piers and roofed over.

TOOL HOUSES. These consist of frame buildings supported on pile heads, no. 1 being 12 by 10 ft.; and no. 2, 12 by 25 ft.

COAL BOX.—This is of 2 in. plank, and has a capacity of 10 tons. Its dimensions are 11 ft. by 7 ft. by 6 ft.

The Casting of a Locomotive Frame.

The advent of the cast steel locomotive frame into general use in the last decade, bringing with it the use of cast steel parts throughout the locomotive construction, has resulted in a wonderful expansion in the steel industry from a railway standpoint. The former method of building up a wrought iron frame by forging is familiar to all locomotive men; but very few have more than a passing knowledge of the initial stages through which a cast steel frame proceeds before it reaches the machine shop, the place where the majority make their first acquaintance with the cast steel frame. In consequence, it is believed that a brief description of the stages through which the frame passes before reaching the machine shop will not only be appreciated but will also be of value in leading to a proper understanding of the care and attention required before the production of the frame is possible. The information contained in this article was obtained at the Canadian Steel Foundries' new plant at Longue Pointe, Montreal, from Wm. Cox, Foundry Superintendent.

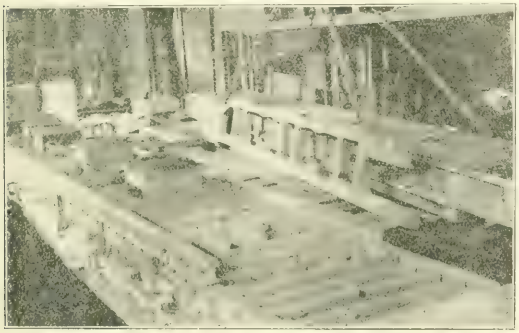


Fig. 1.—Cope and Flask with Drawn Pattern, and Mould ready to Pour.

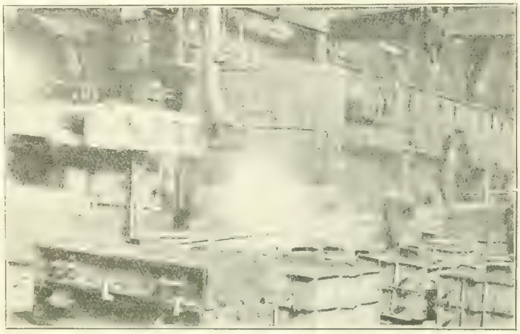


Fig. 2.—Pouring a Cast Steel Locomotive Frame.

The point that impresses the writer most forcibly is the striking difference in weights between the casting as it comes from the mould, and the same casting as it is finally ready to be built into the locomotive; the latter is less than half the original weight. Consideration of the various steps in the production of the frame will explain the reasons for the big difference. As a typical example, the frame for a small six wheel switching engine has been selected for descriptive purposes, it being the intention to follow this frame through from the pattern state to the time when it is ready for delivery to the machine shop.

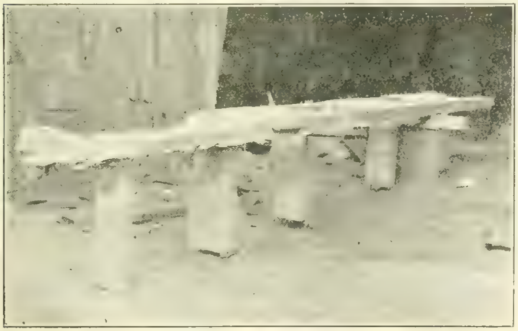


Fig. 3.—Frame Immediately after being Cast.

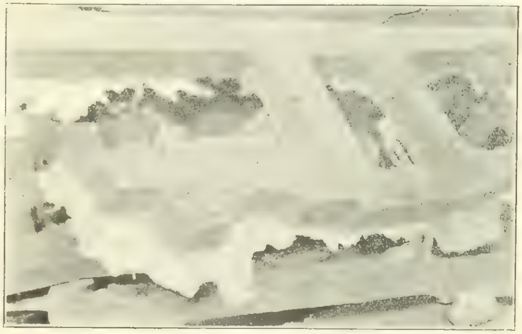


Fig. 4.—Section of Frame, Showing Test Bar.

There is nothing unusual about the pattern, other than the fact that the axle box opening has a cross brace at the bottom to prevent the top rail from warping the frame out of shape while cooling. The shrinkage is thus equalized top and bottom. The pattern shown in fig. 1, standing against the cope, has just been drawn from the sand of the mould. The mould is entirely contained in the flask, the cope presenting a smooth surface. A special grade of sand is used, and while being introduced into the mould is thoroughly rammed—to a greater degree than is necessary for cast iron. When the flask is filled, and rammed full to the level of the top of the flask, the surface is treated with a layer of separating sand, and the cope placed on top and similarly rammed full of sand. At the outer end of the slabbed portion of the frame, the pouring gate is located, with four risers or sprue holes at intervals along the length of the frame.

The construction of the cope and flasks that hold the moulds is in itself rather interesting, being of an exceptionally good design. The handling of moulds for long thin castings, is a more or less difficult task unless both cope and flask are particularly solid, for on account of the great length the whole sags in the centre. This precludes the use of wooden mould boxes. The moulds used are built up of cast steel sections, three lengths being joined along each side to form supporting beams. These side pieces are cast in channel beam sections, with outwardly projecting flanges. The shape is shown in fig. 1, but the method of joining up may best be seen in fig. 2, the pouring operation. Sagging is undesirable, as it tends to break the sand of the mould in addition to warping the resultant casting.

The flask, with contained mould, is lifted by a crane and carried across to an oven car, on which it is subjected to a surface treatment before it is baked. The surface treatment consists in filling the surface of the mould with long wire nails, closely spaced, especially along the edges of the mould where the sand is liable to break down from the rolling action of the molten metal traversing the mould. The nailed surface of the mould is next treated with a heavy saturation of molasses and water. Following this treatment of the flask, the cope is carried across and placed on top of the flask and treated in a like manner. The two are then placed in the oven for a thorough baking. The resultant mould must be much harder and more solid than for cast iron moulds. Following the baking of the moulds, the halves are secured together as shown to the left in fig. 1. Gates, as indicated, are built up around the pouring hole and risers.

Next in order comes the pouring of the mould, illustrated in fig. 2. One of the foundry cranes carries a 10 ton, bottom pouring ladle over to the pouring gate. The ladle gate being drawn, the mould is slowly filled from one end. As the molten steel finally creeps up the last riser, a signal is given for the pouring to stop, the ladle then proceeding along the mould to fill up each of the risers in order that a uniform liquid pressure may be presented through the full length of the casting, absorbing the liquid contraction while setting.

In from 10 to 15 minutes, the casting will have set sufficiently to permit of loosening the clamps which hold the cope and flask together. This is partially done to break up the mould sand in the frame openings. On further setting, the cope is loosened still more, and is finally removed entirely, the frame being left in this condition to cool. Its appearance on leaving the mould is shown in fig. 3; where it is shown inverted. The nearest projecting lug is the pouring sprue, the other four being risers. The amount of fins left, and the bulk of metal left to form struts in the journal spaces are shown to good advantage in fig. 4.

Kind of Steel	Analysis Carbon	Phosphorous	Manganese	Sulphur	Silicon	Vanadium	Elastic limit per sq. in.	Tensile strength per sq. in.	Elongation %	Reduction in area %
Vanadium	0.23	0.031	0.72	0.035	0.30	0.180	47,500	80,000	27	47.6
	[illegible]	[illegible]	0.66	0.029	0.33	0.175	47,[illegible]	80,000	27	53.5
Ordinary	[illegible]	[illegible]	0.73	[illegible]			37,750	72,000	30	44.1
	[illegible]	[illegible]	[illegible]	[illegible]			40,500	71,000	30	49.0

In this condition, fresh from the moulds with the sand removed, the casting weighs 5,380 lbs.

At two locations on the frame, short test bars, one of which is shown at the rear of the projecting rail in fig. 4, are cast integral with the frame. These are afterwards sawn off and subjected to various physical and chemical tests to determine whether they meet the required specifications.

Mounted as in fig. 3, the projecting fins are chipped off with air hammers, and the sand clinging tendency peculiar to steel castings, removed by the same means, leaving the casting clean. The casting is then removed to the cold cutting off saw, where the risers, test pieces and temporary struts are sawn off. The cleaned casting at this point, ready for delivery to the machine shop, weighs 3,670 lbs.

The casting next goes to the annealing oven, which is a long shallow pit, temporarily arched over during heats with brickwork. This is filled with castings, and a temperature of about 900 degs. F. maintained for several hours, temperature being taken by instruments. This produces a uniformly soft casting, at the same time removing the chill strains set up by unequal rates of cooling.

Next, the casting goes to the blacksmith shop, where under the steam hammer, heated if necessary, the frame is straightened and put in shape for machining.

In the machine shop it is subjected to the usual series of operations, successively on the planer, slotter and drill, still further reducing the weight to 2,560 lbs.

A summary of the weights at the different stages of completion is as follows: Immediately following casting, 5,380 lbs.; cleaned, 3,670 lbs.; and finished, 2,560 lbs. An examination of these figures shows what a large bulk enters into the production of a light frame. The finished product is less than half the weight of the initial casting.

Recently, there has been given a decided impetus to the use of the cast steel frame by the use of vanadium. Some tests made at the Canadian Steel Foundries' plant are given in the accompanying table, and show the remarkable superiority of vanadium steel to ordinary cast steel, the difference being almost as marked as that which exists between the old wrought iron and the more recently developed ordinary cast steel frame. With the use of vanadium in the frame, a big forward stride has been made.

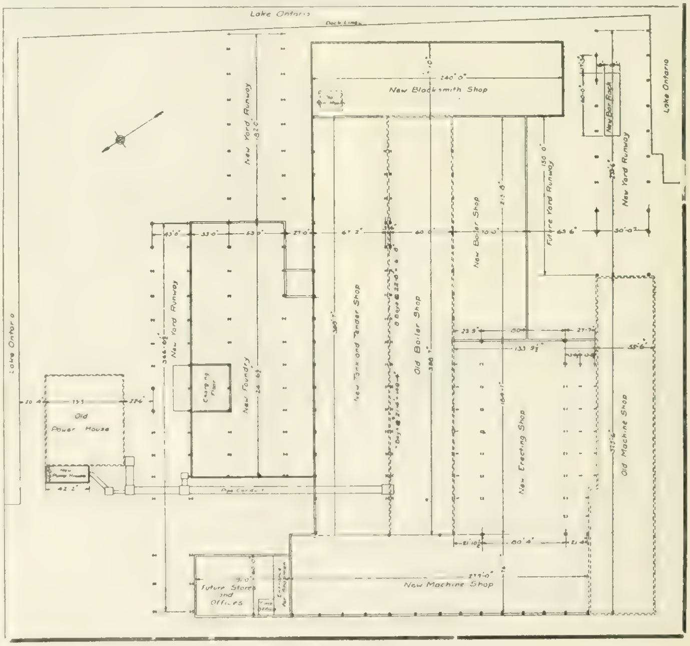
The Canadian Locomotive Company's New Plant.

An idea of the radically different layout of shops at the Canadian Locomotive Co.'s plant at Kingston, Ont., as at present being changed, may be gathered from the accompanying plan. On the completion of the buildings there shown, the whole plant will be essentially new, as while three of the buildings are shown as being old, the only one of these three that goes back 10 years is the machine shop to the right, completed some few years ago. The power house has only been in operation about eight years, and the old boiler shop less than two years old, so that with the new shops, the plant will be almost entirely new throughout, replacing the antiquated buildings with which the company has heretofore been compelled to do business.

The whole area shown in the plan has been more or less covered with a miscellaneous collection of old stone buildings, scarcely adapted to the work done, except under adverse conditions of operation. The problem presented was that of removing these old buildings, and replacing them with newer ones without interfering with the locomotive construction work. This is being accomplished by razing the old buildings one at a time, and on the cleared site, erecting the new ones. This work was commenced on the buildings to the north of the boiler shop, first erecting the new tank and tender shop on cleared ground, and then the foundry. Following this will come the construction of the new erecting shop, to replace the one on the site of the new machine shop, at the lower end of the old boiler shop. On the outer end of the pier on which the plant stands will next be erected the new blacksmith shop, to house the older one standing on the ground of the new erecting shop. This will be followed by the new boiler shop (an addition to the present one). Next in order comes the new machine shop and offices, replacing similar but smaller structures on the present site. All these buildings are to be of steel construction throughout.

The convenience of the layout is at once apparent. Every building will be in open communication with all the others. In addition, it will be noted that the focal point of construction is the erecting shop, about which every building in the plant is arranged, all the parts feeding directly into that final point.

The general design for these buildings has been worked out by the firm of Henry Goldmark, consulting engineers, New York; all details regarding buildings and their equipment, and the construction work, have been carried out under the personal supervision of C. J. Goldmark, of that firm.



Rebuilt Plant of Canadian Locomotive Co.

The effect of vanadium in plain carbon steel castings is said to be to increase the elastic limit about 30%, giving a much higher proportion of available strength for the same ultimate strength. Moreover, it increases the power of the castings to withstand repeated and alternating stresses fully 50%.

Orders by Board of Railway Commissioners.

Beginning with June, 1904, Canadian Railway and Marine World has published in each issue summaries of orders passed by the Board of Railway Commissioners, so that subscribers who have filed the paper have a continuous record of the Board's proceedings. No other paper has done this.

The dates given of orders, immediately following the numbers, are those on which the hearings took place, and not those on which the orders were issued. In many cases orders are not issued for a considerable time after the dates assigned to them.

18281. Dec. 9.—Rescinding order [illegible], June 24, defining express delivery and collection limits for Montreal, and establishing collection and delivery limits in Montreal, Westmount and Maisonneuve.

18282. Dec. 11.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to divert road allowance at mileage 91.18 and cross same at grade at mileage 91.30 from Glentay, Ont.

18283. Dec. 12.—Amending order 17784, Oct. 17, re removal of spur at Tamarack station, B.C., by Nelson and Fort Sheppard Ry. (G.N.R.).

18284. Dec. 12.—Authorizing Canadian Northern Ontario Ry. to build bridge over Wistiwasing river (first crossing), Chisholm tp., at mileage 204.53 from Ottawa.

18285. Dec. 10.—Authorizing Canadian Northern Quebec Ry. to build across public road in lot 29, con. 3, Arundel tp., Que., by structure carrying highway over track.

18286. Dec. 12.—Approving British America Express Co.'s standard mileage tariff of maximum tolls for merchandise, C.R.C. 1, to take effect Jan. 1, 1913.

18287. Dec. 13.—Ordering C.P.R. to build public crossing over its Sault Ste. Marie branch, at Espanola station, Ont., 150 or 200 ft. west of existing private crossing.

18288. Dec. 9.—Approving Montreal and Southern Counties Ry. location, from cadastral lot 264, to Central Vermont Ry., on cadastral lot 203, St. Antoine de Longueuil parish, Que., 2¼ miles.

18289. Dec. 10.—Authorizing Canadian Northern Ry. to build across public road between secs. 11 and 14, tp. 21, r. 20, w. 2 m., on its Craven northeasterly line, Sask.

18290. Dec. 13.—Rescinding orders 16838 and 17970, June 20 and Nov. 5, re Canadian Northern Ontario Ry. crossing of C.P.R., near Ottawa.

18291, 18292. Dec. 13.—Authorizing C.P.R. to build spurs for McColl Bros. & Co., Montreal, and for Coquitlam Terminal Co., Coquitlam, B.C., connecting the latter with main line.

18293. Dec. 13.—Authorizing C.P.R. to build spur into Pickerel river Indian reserve, Parry Sound district, Ont.

18294. Dec. 14.—Authorizing C.P.R. to open for traffic its second track from Secretan to Walker, mileage 44.9 to 43.

18295. Dec. 14.—Authorizing C.P.R. to use bridges 53.7 and 65.6, Crowsnest subdivision, B.C.

18296. Dec. 13.—Amending order 18106, Nov. 22, by substituting Vancouver, Victoria and Eastern Ry. and Navigation Co. for Vancouver, Westminster and Yukon Ry. in second line of operative part.

18297. Dec. 13.—Approving, temporarily, Kootenay and Alberta Ry. standard passenger tariff of maximum local passenger fares, C.R.C. 1, to take effect Jan. 1.

18298. Dec. 14.—Ordering G.T.R. to file, on or before May 1, 1913, plans of proposed station and facilities at Jordan, Ont.

18299. Dec. 14.—Ordering C.P.R. to appoint permanent agent at Niverville station on or before Feb. 1, 1913.

18300. Dec. 14.—Authorizing C.P.R. to open for traffic its second main track from north of G.T.R. diamond crossing at St. Johns, Que., to St. Johns station, 1 mile.

18301. Dec. 14.—Authorizing C.P.R. to cross, with its third track, West street, Chatham, Ont.; and reserving for further consideration the installation of gates.

18302. Dec. 14.—Authorizing Edmonton, Dunvegan and British Columbia Ry. to build across 20 highways, mileage 68.30 to 130, Alta.

18303. Dec. 14.—Authorizing C.N. Ontario Ry. to build across public road between lots 8 and 9, con. 2, Gibbons tp., Ont.

18304. Dec. 14.—Approving Edmonton, Dunvegan and British Columbia Ry. location from north boundary of sec. 23-62-67, w. 2 m., mileage 68.30, to east side of Athabasca river, sec. 15-71-1, w. 5 m., mileage 130, Alta.

18305. Dec. 16.—Approving Alberta Central Ry. location from mileage 73.3 to 100, west of Red Deer.

18306. Dec. 14.—Authorizing Edmonton, Dunvegan and British Columbia Ry. to build across 3 highways, mileage 111.35 to 129.8, Alta.

18307. Dec. 14.—Authorizing C.N. Quebec Ry. to build siding for Donnacona Paper Co., Les Ecureuils parish, crossing public road on lot 80.

18308. Dec. 16.—Approving Canadian Northern Ry. plans showing standard trestle work to be used west of Port Arthur, Ont.

18309. Dec. 14.—Approving location G.T. Pacific Ry.'s station at mileage 404, east of Prince Rupert, B.C.

18310, 18311. Dec. 14.—Authorizing C.P.R. to build spurs for Guelph Stove Co., Guelph, Ont., and Alberta Linseed Oil Mills, Medicine Hat, Alta.

18312 to 18314. Dec. 16.—Approving Esquimalt and Nanaimo Ry. detail plans of bridges 39.9 over Trent river, and 8.5, and authorizing it to build bridges 3.4 over French creek, and 15.5 over Big Qualicum river, on its Comox extension, Vancouver Island, B.C.

18315. Dec. 14.—Authorizing C.N. Ontario Ry. to build across and divert public road between cons. 1 and 2, Pembroke tp., mileage 83.10 from Ottawa.

18316. Dec. 18.—Establishing collection and delivery limits for Dominion Ex. Co., in Blind River, Ont.

18317. Dec. 16.—Authorizing Canadian Northern Ry. to build across and divert public road between sec. 34, tp. 28, r. 7, and sec. 3, tp. 29, r. 7, w. 4 m., on its Goose Lake extension, Alta.

18318. Dec. 16.—Authorizing Provincial Natural Gas and Fuel Co., of Ontario, to lay gas pipe under G.T.R., near Stevensville station.

18319, 18320. Dec. 16.—Authorizing Edmonton, Dunvegan and British Columbia Ry. to build across 16 highways in Alberta.

18321. Dec. 16.—Authorizing C.P.R. to revise grade of existing main line at approaches to G.T. Pacific Branch Lines Co.'s Melville-Regina branch grade crossing, Regina, Sask.

18322. Dec. 17.—Amending order 18002, Nov. 13, re Canadian Northern Ry. building across C.P.R. in Moose Jaw, Sask.

18323. Dec. 16.—Authorizing construction of subway at Eleventh avenue, Moose Jaw, Sask.

18324. Dec. 16.—Approving location of C.P.R. Suffield-Kipp branch from sec. 29-13-13, to sec. 9-13-17, w. 4 m., from mileage 32.85 to 57.45, and authorizing building of same across 24 highways.

18325. Dec. 16.—Authorizing C.P.R. to build its Lacombe easterly branch across 7 highways, mileage 149.20 to 153.69, Alta.

18326. Dec. 16.—Authorizing Clarence tp., Ont., to build road allowance across C.P.R. Montreal and Ottawa branch, between cons. 1 and 2, mileage 58.86.

18327. Dec. 16.—Authorizing G.T.R. to build two sidings for De Laval Dairy Supply Co., Peterboro, Ont.

18328. Dec. 16.—Authorizing C.P.R. to open for traffic its second main line, Cascade subdivision, B.C., between Vancouver and Westminster Jct., 16.44 miles.

18329. Dec. 14.—Authorizing C.P.R. to build its Pheasant Hills branch across highways in Sutherland, Sask., from mileage 206.11 to 317.15.

18330. Dec. 16.—Authorizing Edmonton, Dunvegan and British Columbia Ry. to build across and divert highway in sec. 19-54-24, w. 4 m., by means of overhead crossing.

18331. Nov. 18.—Authorizing city of Saskatoon, Sask., to carry its municipal railway across C.P.R. at avenue H.

General order 99, Dec. 18.—Disallowing special tariffs of railway companies, effective dates of which were postponed to and including Dec. 31, by orders 17911, 18088 and 18153, Nov. 6, 21 and 30, and in lieu thereof the companies may make effective on statutory notice, special tariffs chargeable for cartage at points in eastern Canada where cartage services are rendered by said companies, which shall not exceed 2½c. per 100 lbs., provided a minimum toll be charged for any single complete shipment not to exceed 15c.

18332. Dec. 19.—Approving Hudson Bay, Peace River and Pacific Ry. location, from sec. 15-18-9, e.p.m., mileage 62.9, to mileage 70.9 from Winnipeg in unsurveyed territory.

18333. Dec. 17.—Authorizing National Transcontinental Ry. and Canadian Northern Ry. to operate trains over crossing, without first stopping, at mileage 246, St. Boniface, Man.

18334. Dec. 17.—Extending, for three months from Jan. 2, 1913, time within which Esquimalt and Nanaimo Ry. may complete spur for Swift Canadian Co., Victoria, B.C.

18335. Dec. 18.—Authorizing C.P.R. to build two spurs for Beaver Co. in Hull tp., Que.

18336. Dec. 18.—Authorizing Vancouver and Lulu Island Ry. to open for traffic its second track between Granville street, Vancouver, and 24th avenue, Point Grey, B.C., about 2¼ miles.

18337. Dec. 18.—Extending, to May 30, 1913, time for completion of spur from Winnipeg to Humberstone coal mine, by G.T. Pacific Ry., authorized by order 17827.

18338. Dec. 18.—Authorizing G.T. Pacific Branch Lines Co. to build highway across its Prince Albert branch, at mileage 23.9, Saskatoon district, Sask.

18339 to 18341. Dec. 17, 18.—Authorizing Canadian Northern Ry. to build across public road between sec. 19-2-6, and sec. 24-2-7, w. 2 m., on its Bienfait to Estevan line; to build across and divert public roads in n.e. ¼ sec. 33-33-9, w. 3 m., on its Goose Lake extension, and between secs. 9 and 10, tp. 65, r. 22, w. 4 m., on its Morinville branch.

18342. Dec. 28.—Approving supplement 11 to Express Classification 2, for use of express companies subject to the Board's jurisdiction.

18343. Dec. 13.—Dismissing complaint of J. B. McGugan, Kronau, Sask., against C.P.R., alleging discrimination in [illegible] Kronau and [illegible]

18344. Dec. 18.—Ordering Dominion Atlantic Ry. to install, within four months, an automatic electric bell at crossing of public road east of Weyburn station, N.S.

18345. Dec. 19.—Authorizing C.N. Ontario Ry. to operate trains, [illegible] over C.P.R. crossing, near Chaudiere Jct., Que.

18346. Nov. 12.—Authorizing restricted collection and delivery limits of express companies in Port Arthur, Ont.

18347. Dec. [illegible].—Authorizing T.H. & B.R. to build spur through Canada Steel Co.'s lands, Hamilton, Ont.; and to operate it jointly and on equal terms with G.T.R.

18348, 18349. Dec. 20.—Authorizing Canadian Northern Ry. to build spur to exhibition grounds, Brandon, Man., and to build across and divert Main St., Moose Jaw, Sask., and to cross Moose Jaw creek and a private road, all overhead.

18350. Dec. 19.—Authorizing C.N. Ontario Ry. to divert public road in lots 3 and 4, r. 2, Credit Indian reserve, Toronto tp.

18351 to 18353. Dec. 20, 19.—Authorizing G.T.R. to build sidings for Beardmore & Co., Acton; Beachville White Lime Co., Oxford tp.; and Davies Co., York tp., Ont.

18354, 18355. Dec. 20.—Approving C.P.R. plans showing location of station and siding proposed at St. Francois de Salle, Que., and plan A, showing revision of grade and subway proposed at Dundas St., Woodstock, Ont.

18356. Dec. 23.—Authorizing C.P.R. to use for construction purposes only, crossing where its third main track crosses Jacques Cartier Union Ry., Lachine parish, Que.; and approving plan of temporary protection.

18357. Dec. 21.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to build bridge 34.4 over Third Depot Lake, near Parham, Ont.

18358. Dec. 23.—Approving location of C.N. Ontario Ry. station grounds at mileage 305.19, Blueface, Sudbury district, Ont.

18359. Dec. 21.—Authorizing Canadian Northern Ry. to build across 7 highways on its Craven northeasterly line, Sask.

18360. Dec. 23.—Extending to June 1, 1913, time within which Atlantic, Quebec and Western Ry build crossings, culverts, and drains along its railway.

18361. Dec. 16.—Authorizing C.P.R. to build across Nairn St., Winnipeg, one additional track each on its north and south main lines, crossing to be protected by day and night watchmen.

18362. Dec. 16.—Authorizing G.T.P. Branch Lines Co. to open for traffic its Regina-Moose Jaw branch from mileage 0 to 34.7; and ordering that the line be fenced before June 1, 1913.

18363. Dec. 20.—Approving crossings of Front and Overend streets, Toronto, by subways, city to pave Mill St. from Cherry St. to Overend St.

18364. Dec. 21.—Ordering G.T. Pacific Ry. to cut off top of hill on south side of N. Gilmour's farm crossing, Moose Jaw, Sask., and improve grade.

18365. Dec. 20.—Dismissing application of city of Winnipeg for order requiring C.P.R. to remove spur track connecting with its Winnipeg Beach branch, St. John parish, and along Jarvis Ave., with its main line spur.

18366. Dec. 21.—Authorizing city of Edmonton, Alta., to open up Muskoka Ave., across Canadian Northern Ry.

18367. Dec. 21.—Rescinding order 11224, July 19, that C.P.R. remove fence placed across crossing A, between secs. 7 and 18, and 8 and 17, 9-25 w. 4 m., Alta., and carry out Standard Regulations Affecting Highway Crossings, as amended May 1, 1910.

18368. Dec. 21.—Authorizing C.P.R. to open original road allowance, known as Twelfth St., and dismissing application of town of Blairmore, Alta., for order requiring C.P.R. to build crossing at Eighth Ave.

18369. Dec. 21.—Authorizing Pleasant Valley municipality 288, Sask., to build crossing over C.P.R. between secs. 7 and 8, and 7 and 18, [illegible] 18, w. 3 m.

18370. Dec. 21.—Authorizing Regina, Sask., municipal railway to use C.N.R. crossing on Dewdney St., east of Albert St., and amending order [illegible], July 21, 1911.

18371. Dec. 24.—Authorizing G.T. Pacific Ry. to carry traffic over its main line in British Columbia between South Hazelton and New Hazelton, mileage 176.8 to 181.

18372. Dec. 23.—Authorizing C.N. Saskatchewan Ry. to cross G.T. Pacific Branch Lines Co.'s line, north of distant signal on latter line, and dismissing application to cross at point applied for.

18373. Dec. 17.—Authorizing Toronto Suburban Ry. to build across G.T.R. in Esquesing tp., Ont.

18374. Dec. 23.—Ordering Canadian Northern Ry. to macadamize approach and roadway under subway trestle work and erect fence in accordance with Railway Act, on west side of opening ae each end of subway for 300 ft., at Main St., Emerson, Man.

18375. Dec. 23.—Ordering G.T.R. to cut down trees on south side of crossing at 3rd and 4th

Steam Railway Statistics for Year Ended June 30, 1912

In the following table the column headed gross earnings includes passenger and freight earnings, as well as miscellaneous earnings; the latter not being shown separately; the next four columns give the operating expenses classified under their various headings, while the last gives the net earnings, which are arrived at by deducting the totals of the four columns referred to from the figures in the gross earnings column. The minus mark (—) before figures in the net earnings column shows that there was a deficit in the operations of the line to the extent of the figures given. The numbers in brackets—thus (1)—after the name of the railway refer to notes on page 68. The cents have been omitted in all cases, and the figures in the totals show the aggregate earnings, etc., including the cents, omitted from the detailed items.

Name of Railway	Mileage	Passenger Earnings	Freight Earnings	Gross Earnings	Maintenance of Way and Structures	Maintenance of Equipment	Traffic and Transportation Expenses	General Expenses	Net Earnings
Alberta Ry. & Irrigation Co. (7)	111.82	$ 96,448	$ 269,172	$ 383,782	$ 64,384	$ 20,248	$ 107,141	$ 21,304	$ 170,704
Algoma Central & Hudson Bay (1)	134.38	51,521	314,189	545,054	116,531	59,376	119,915	29,999	219,230
Atlantic, Quebec & Western (2)	52.25	11,981	14,844	26,786	18,425	867	23,188	4,172	—19,866
Algoma Eastern (1)	22.70	1,628	94,940	97,811	15,513	11,342	21,388	9,807	39,760
Bay of Quinte (3)	89.39	47,988	185,306	238,333	32,316	32,832	110,944	10,700	52,039
Bedlington & Nelson (4)	15.30	345	22,251	2,597	8,208	421	660	942	—7,637
Brandon, Sask. & H. B. (4)	69.45	29,916	52,757	83,080	31,488	9,604	52,365	4,523	—14,901
British Yukon (5)	101.12	66,370	210,045	279,926	25,644	6,381	34,227	11,619	202,093
Brockville, Westport & N.W. (3)	45.00	39,139	36,282	75,503	13,825	3,671	22,901	2,854	32,250
Canada Southern (16)	380.04	3,085,335	6,533,468	9,666,639	841,882	953,485	3,142,009	161,177	4,568,083
Canadian Government Railways—									
Intercolonial (6)	1,462.89	3,558,498	7,259,766	11,003,410	1,826,338	2,682,304	5,992,504	251,744	250,517
Prince Edward Island	269.33	187.310	180,499	378,773	117,599	87,286	236,909	15,170	—78,193
Canadian Northern (3)	4,272.92	3,997,900	15,575,039	20,860,093	2,608,866	2,900,277	8,364,139	549,142	6,437,667
Canadian Northern Ontario (3)	492.35	258,772	595,436	881,953	211,904	112,243	488,781	38,735	30,288
Canadian Northern Quebec (3)	369.27	348,780	955,316	1,327,534	226,900	153,933	660,284	47,125	239,291
Canadian Pacific (7)	10,813.70	35,098,796	79,204,412	116,233,812	17,719,795	13,608,708	41,803,850	2,256,630	40,844,827
Cape Breton	31.00	4,985	4,336	9,338	7,193	725	8,340	3,395	—10,376
Caraquet (8)	84.78	21,343	45,291	66,635	16,377	7,192	27,308	5,101	10,456
Central Ontario Ry. (3)	149.73	93,447	220,692	321,368	54.675	20,514	110,526	7,701	127,949
Crow's Nest Southern (4)	74.18	24,708	127,036	152,447	68,322	19,534	56,703	8,185	—281
Cumberland Ry. & Coal Co (9)	32.00	18,245	97,590	115,999	21,538	14,838	42,400	3,781	33,441
Dominion Atlantic (7)	279.01	421,033	579,297	1,005,245	132,806	63,719	355,687	33,526	419,560
Eastern British Columbia (10)	16.00	4,333	37,798	42,244	6,029	7,806	11,403	938	16,065
Elgin & Havelock	28.00	4,333	9,519	13,852	4,248	580	5,023	588	3,411
Essex Terminal	10 00		33,022	35,283	5,709	209	9,722	2,000	17,641
Grand Trunk (11)	3,105.82	12,426,044	22,978,790	35,801,975	3,871,367	6,310,851	14,028,988	928,070	10,662,696
Grand Trunk (Canada Atlantic) (11)	456.26	509,347	1,634,225	2,173,363	440,565	305,632	1,115,262	60,234	251,668
Halifax & South Western (3)	378.32	232,270	242.507	478,031	135,992	39,843	228,108	21,341	52,745
Hereford (17)	52.18	20,111	53,363	74,639	39,690	15,038	47,970	4,160	—32,221
Inverness Ry. & Coal Co. (3)	60.91	23,627	175,839	200,704	30,404	23,678	49,102	8,106	89,412
Irondale, Bancroft & Ottawa (3)	51.00	9,018	16,822	26,380	8,864	783	11,696	1,509	3,527
International of New Brunswick (12)	112.00								
Kent Northern	27.00	8,724	12.022	20,747	5,781	887	6,924	1,660	5,493
Kettle Valley	22.20	513	3,566	4,159	1,299		1,478	490	891
Kingston & Pembroke (7)	109.80	65,546	163,796	225,936	63,621	29,332	86,860	9,093	37,027
Klondike Mines	31.81	2,069	57,564	60,034	17,294	5,196	18,086	10,951	8,505
Lotbiniere & Megantic	30.00	5,695	30,510	36,215	12,268	3,048	9.154	6,413	5,600
London & Port Stanley (18)	23.66	38,640	79,044	118,571	21,659	25,144	99,849	5,630	—33,712
Maine Central (17)	5.10	9,629	7,008	16,700	2,715	2,279	8,206	686	2,812
Manitoba Great Northern (4)	97.67	7,766	114,999	122,843	32,555	13,079	50.031	4,661	22,516
Maritime Coal Ry. & Power Co.	15.00	7,444	56,224	63,669	11,634	4,119	20,092	1,717	26.105
Massawippi Valley (17)	35.46	71,988	147,729	220,629	38,345	34,121	113,708	7,467	26,896
Moncton & Buctouche	32.00	10,785	18,480	29,319	8,825	2,536	9,544	2,435	5,976
Midland Ry. of Manitoba (4)	97.82	22,613	38,459	61,155	12,001	2,701	27,407	1,111	17,933
Montreal & Atlantic (7)	163.40	222,710	861,734	1,109,848	302,995	110,997	501,886	29,723	164,245
Montreal & Province (11)	58.60	63,660	62,511	128,320	33,730	5,741	41,016	2,904	44,926
Montreal & Vermont Jct. (11)	23.60	61,656	60,635	122,400	14,502	10,974	42,166	5,227	49,529
Morissey, Fernie & Michel (13)	10.85	7,600	72,108	79,708	9,513	13,274	33,464	20,334	3,122
Napierville Jct. (14)	27.06	5,637	64,637	70,651	6,072	5,352	29,730	1,841	27,654
Nelson & Fort Sheppard (4)	55.42	32,311	44,934	80,169	56,164	9,371	173,004	8,530	—166,901
New Brunswick Coal & Ry. Co. (15)	58.00	11,775	32,757	48,281	27,943	12,856	26,314	10,258	—29,091
New Brunswick & P.E.I.	36.00	12,993	24,677	37,726	9,496	5,844	14,810	2,748	4,826
New Westminster Southern (4)	23.73	14,058	38,748	59,017	12,114	4,112	12,763	2,082	27,944
North Shore	8.63	196	1,723	1,920	177		1,467	99	176
Ottawa & New York (16)	56.90	82,848	102,728	189,316	46,086	20,803	91,354	8,351	22,720
Pere Marquette (18)	198.81	170,453	2,199,364	2,378,339	218,011	417,274	891,985	55,763	795,305
Phillipsburg Ry. & Quarry Co.	6.00		6,651	6,651	2,500			3,115	1,036
Quebec Central (19)	253.00	418,238	921,302	1,351,039	190,109	158,951	527,488	67,427	407,062
Quebec & Lake St. John (3)	286.50	280,400	505,494	798,055	129,828	135,095	393,827	37,121	102,181
Quebec, Montreal & Southern (14)	191.91	149,464	252,040	402,012	137,889	73,091	176,035	19,410	—4,415
Quebec Oriental (2)	100.00	40,798	50,112	90,948	26,741	12,585	42,388	4,153	5,078
Quebec Ry., Light & Power Co. (20)	27.50	11,843	62,415	74,883	8,861	10,693	28,596	8,474	18,256
Red Mountain	9.50	3,606	15,776	19,634	13,061	2,817	15,356	1,542	—13,144
Rutland & Noyan	3.39	8,807	5,055	13,863	3,303	2,132	5,402	655	2,369
Salisbury & Albert	45.00	9,319	13,104	23,176	10,497	2,538	10,251	2,277	—2,387
Schomberg & Aurora (3)	14.40	6,035	6,9[illegible]2	12,989	6,238	889	8,079	497	—2,715
Stanstead, Shefford & Chambly (11)	43.00	41,068	56,115	99,798	24,931	7,498	48,802	2,546	16,019
St. Clair Tunnel	1.13		296,936	296,936	10,579	11,339	59,407	3,232	212,376
St. Lawrence & Adirondack (16)	46.12	236,845	354,356	593,773	70,666	22,985	296,680	12,452	190,987
St. Martin's	30.00	6,188	12,406	19,006	5,103	575	7,147	1.096	5,083
Sydney & Louisburg (9)	67.11	41,613	700,143	759,028	108,920	151,125	233,072	28,816	242,093
Temiscouata (22)	113.00	61,346	149,165	214,048	51,547	25,462	72,221	13,426	51,380
Timiskaming & Northern Ontario (21)	302.28	760,190	1,085,330	1,935,421	370,436	234,089	695,482	87,678	547,784

(Continued on page 68)

Steam Railway Statistics for Year Ended June 30, 1912—(*Continued from page 67*)

Name of Railway.	Mileage	Passenger Earnings	Freight Earnings	Gross Earnings	Maintenance of Way and Structure	Maintenance of Equipment	Traffic and Transportation Expenses	General Expenses	Net Earnings
Thousand Islands.........	6.33	[illegible]	24,150	39,955	6,710	2,097	20,357	4,517	6,270
Toronto, Hamilton & Buffalo (7-16-23)	80.15	369,164	1,088,243	1,467,312	169,451	124,164	487,794	28,123	657,778
Vancouver, Victoria & Eastern (4) ...	231.56	272,141	561,069	849,076	199,806	67,006	322,171	26,960	233,069
Victoria Terminal Ry. & Ferry Co. (4)	0.99	2,465	[illegible]	5,236	1,003	338	1,456	274	2,163
Victoria & Sidney (4)	15.97	28,559	30,709	59,713	18,388	5,356	23,280	3,901	8,786
[illegible]		648,497	1,628,767	2,281,586	234,664	511,155	1,142,206	75,762	316,896
[illegible]	10.75	4,605	90,543	95,148	28,561	36,374	41,593		—11,381
York & Carleton....................	10.50	1,983	3,686	5,670	1,081	100	2,258	5	2,224
	26.651.20	65.048,186	149,961.140	219.403,752	31.514.098	29,811.511.	84,163.242	5,137.688	68.677.212

Notes to Steam Railway Statistics.

(1) The Algoma Central Ry. and the Algoma Eastern Ry. (formerly known as the Manitoulin and North Shore Ry.) are owned by the Lake Superior Corporation. The A. E. Ry. has trackage rights over 3.25 miles of C.P.R. lines.

(2) The Atlantic, Quebec and Western Ry. was once known as the Baie des Chaleurs Ry. It has 1.75 miles of trackage rights over another company's line.

(3) Mackenzie, Mann and Co. Ltd. interests own or control and operate the following railways: Bay of Quinte Ry.; Brockville, Westport and North Western Ry.; Canadian Northern Ry.; Canadian Northern Ontario Ry.; Canadian Northern Quebec Ry.; Central Ontario Ry.; Halifax and South Western Ry.; Inverness Ry. and Coal Co.; Irondale, Bancroft and Ottawa Ry.; Quebec and Lake St. John Ry. and Schomberg and Aurora Ry.

The Bay of Quinte Ry. has trackage rights over 19 miles of another company's lines. The Central Ontario Ry. operates the Marmora Ry. and Mining Co.'s line (formerly known as the Ontario, Belmont and Northern Ry. The Toronto-Ottawa section of the C.N.O.R. connects with the Central Ontario Ry. at Trenton, and runs over the B. of Q. Ry. between Deseronto and Sydenham. The Irondale, Bancroft and Ottawa Ry. connects with the Central Ontario Ry. near Birds Creek. The Canadian Northern Ontario Ry. has trackage rights over 3.80 miles into Toronto Union Station.

The Halifax and South Western Ry. mileage includes the Nova Scotia Southern Ry., the Central Ry. of N.S., the Halifax and Yarmouth Ry. and the Liverpool and Milton Ry. It has traffic rights over 2.30 miles of the Intercolonial Ry. into Halifax.

The Canadian Northern Ry. mileage includes 3,672.22 miles of main line and branches, in Ontario, Manitoba, Saskatchewan and Alberta; the Manitoba Ry. including the Northern Pacific and Manitoba Ry., Winnipeg Transfer Ry., Portage and North Western Ry., Waskada and Northeastern Ry., 350.68 miles leased from the Province of Manitoba, and the Qu'Appelle, Long Lake and Saskatchewan Ry. Of the total mileage 397.72 miles are operated under lease, and 250.02 miles under contract. The Canadian Northern Quebec Ry. has 0.80 miles of second track, and has trackage rights over 58.60 miles of the lines of other companies.

(4) The Bedlington and Nelson Ry., the Brandon, Saskatchewan and Hudson Bay Ry., the Crows Nest Southern Ry., the Midland Ry. of Manitoba, the Midland Great Northern Ry., the Nelson and Fort Sheppard Ry., the New Westminster Southern Ry., the Red Mountain Ry., the Vancouver, Victoria and Eastern Ry., the Victoria and Sidney Ry., and the Victoria Terminal Ry. and Ferry Co. are owned by the Great Northern Ry., U.S.A. The several lines have trackage rights over other companies' lines as follows:—Bedlington and Nelson Ry., 8.67 miles; Manitoba Great Northern Ry., 0.99 mile; Midland Ry. of Manitoba, 69,.02 miles; Nelson and Fort Sheppard Ry., 5.42 miles; New Westminster Southern Ry., 1.48 miles; Vancouver, Victoria and Eastern Ry., 1.48 miles.

(5) The British Yukon Ry. is the Canadian section of the line operated as the White Pass and Yukon Route, connecting with steamboats on the Yukon River to Dawson, in the summer, and with stages in the winter.

(6) The Intercolonial Ry. mileage includes the old Canada Eastern Ry., 125.08 miles, the Fredericton and St. Marys Ry. bridge, and the Nova Scotia Steel and Coal Co.'s line; its mileage does not include the Windsor branch, which it owns but leases to the Dominion Atlantic Ry. It has 26.70 miles of second track, and has trackage rights over 77.90 miles of other companies' lines.

(7) The C.P.R. mileage includes 6,740 miles of main lines and branches owned; 3,972.30 miles of leased and proprietary lines, and lines operated under contract. It has 754.20 miles of second track, and has trackage rights over 37.30 miles of the lines of other companies. Its traffic returns include the figures relating to the Esquimalt and Nanaimo Ry., and whatever traffic there has been over the Kaslo and Slocan Ry., which it took over during the year, and which it is now reconstructing as a standard gauge railway. The lines operated by the C.P.R. include the Montreal and Atlantic Ry., and the Alberta Ry. and Irrigation Co., which report separately. The Montreal and Atlantic Ry. has 6.40 miles of second track, and a leased line—Lake Champlain and St. Lawrence Jct. Ry. The Alberta Ry. and Irrigation Co. owns the lines formerly owned by the Alberta Ry. and Coal Co. and the St. Marys River Ry., and has trackage rights over 1.60 miles of the C.P.R.

The Dominion Atlantic Ry., which is controlled by the C.P.R., includes the old Windsor and Annapolis Ry., the Yarmouth and Annapolis Ry., the Cornwallis Branch, the Midland Ry. of Nova Scotia, and Windsor Branch of the Intercolonial Ry., which is operated under an agreement. It has trackage rights over 14.42 miles of the Intercolonial Ry. into Halifax.

The Kingston and Pembroke Ry. is also controlled by the C.P.R. Its passenger and freight earnings in columns 3 and 4, are in excess of the gross earnings given in column 5, which figure is arrived at by deducting $1,405.90, which is marked "Cr." in another column in the statistics headed "other earnings from operation."

The C.P.R. also owns, with the New York Central and Hudson River Rd., the Toronto, Hamilton and Buffalo Ry.

(8) The Caraquet Ry. mileage includes the Gulf Shore Ry., 16.78 miles, which is operated under lease.

(9) The Cumberland Ry. and Coal Co.'s line, formerly known as the Springhill and Parrsboro Ry., together with the Sydney and Louisburg Ry., are owned by the Dominion Coal Co.

(10) The Eastern British Columbia Ry. gives the Spokane and British Columbia Ry. a connection with the C.P.R.

(11) The G.T.R. mileage includes 2,942.61 miles of lines owned, 161.30 miles of lines leased and partly owned. It has 706.81 miles of second trackage and has trackage rights over 13.94 miles of the lines of other companies. It owns the St. Clair Tunnel and approaches, and the Canada Atlantic Ry., which companies report separately, and the Magnetawan River Ry. The Central Vermont Ry., which operates the Montreal and Province Line, the Montreal and Vermont Jct. Ry., and the Stanstead, Shefford and Chambly Ry. (each of which reports separately), is controlled by the G.T.R. It also owns the G.T. Pacific Ry., with its branch lines, which is still reported as being under construction, although it has upwards of 1,000 miles built and in operation. The Canada Atlantic Ry. mileage includes the Ottawa, Arnprior and Parry Sound Ry., the Central Counties Ry. (leased), and the Pembroke Southern Ry. It has 0.88 mile of second track.

(12) No statistics, except mileage, are given for the International Ry. of New Brunswick, the records having been destroyed by fire.

(13) The Morrissey, Fernie and Michel Ry. mileage includes 5.03 miles of leased line. It is owned by the Crow's Nest Pass Coal Co.

(14) The Napierville Jct. Ry., and the Quebec, Montreal and Southern Ry. (which includes the East Richelieu Valley Ry., the United Counties Ry. and the South Shore Ry.), are owned by the Delaware and Hudson Co.

(15) The New Brunswick Coal and Ry. Co.'s line includes the old Central Ry. of N.B., and is operated by a commission appointed by the New Brunswick Government.

(16) The New York Central and Hudson River Rd. owns the Ottawa and New York Ry., and the St. Lawrence and Adirondack Ry. It also controls the Michigan Central Rd., which owns the Canada Southern Ry., and owns with the C.P.R., the Toronto, Hamilton and Buffalo Ry. The Ottawa and New York Ry. has trackage rights over 1.90 miles of other companies' lines. The St. Lawrence and Adirondack Ry. has trackage rights over 8.92 miles of other companies' lines, and its mileage includes 16.52 miles of leased lines. The Canada Southern Ry. operates under lease the Sarnia, Chatham and Erie Ry., 7 miles, and the Leamington and St. Clair Ry., 15.95 miles. It has 243.04 miles of second track and has trackage rights over 18.53 miles of other companies' lines.

(17) The New York, New Haven and Hartford Rd. controls the Boston and Maine Rd., the Maine Central Rd., and the Rutland Rd. The Boston and Maine Rd. operates the Massawippi Valley Ry., which has trackage rights over 2.95 miles of another company's lines. The Maine Central Rd. owns the Princeton Branch of the Washington County Ry. in New Brunswick, operating it under its own name, and also

owns the Hereford Ry. in Quebec.

(18) The Pere Marquette Rd., a U.S. company, owns the Lake Erie and Detroit River Ry. (which operates under lease the Erie and Huron Ry.), and leases the London and Port Stanley Ry. It has trackage rights over 159.81 miles of other companies' lines.

(19) The Quebec Central Ry. has trackage rights over 5.00 miles of other companies' lines.

(20) The Quebec Ry., Light and Power Co. operates a steam railway service, as well as an electric one, over the old Quebec, Montmorency and Charlevoix Ry., on which there are 9.50 miles of second track. It has trackage rights over 3 miles of other companies' lines.

(21) The Timiskaming and Northern Ontario Ry. is owned by the Province of Ontario and is operated by a commission. The Province also owns the Nipissing Central Ry., an electric line, which is run in connection with the T. & N.O.R.

(22) The Temiscouta Ry. has trackage rights over 0.25 mile of another company's line.

(23) The Toronto, Hamilton and Buffalo Ry. has 1.16 miles of second track. It has trackage rights over 4.74 miles of another company's line.

(24) The Wabash Rd. does not own any tracks in Canada, but operates over G.T.R. tracks under a lease.

The total given in the mileage column varies from the total railway mileage given in the general section of the statistical report by 76.03 miles. This difference is accounted for as follows:—Alberta Southern Ry., 19 miles, reported abandoned; Bessemer and Barrys Bay Ry., 5 miles, not operated; Bruce Mines and Algoma Ry., 17.28 miles, not reported on; Carillon and Grenville Ry., 13 miles, not operated during the year; Lenore-Mount Sicker Ry. Vancouver Copper Co.), 12 miles, not reported on; Nosbonsing and Nipissing Ry., 5.50 miles, not reported on; Pontiac and Renfrew Ry., 4.25 miles, not reported on.

Birthdays of Transportation Men in February.

Many happy returns of the day to:—

S. A. Baker, Canadian Freight and Passenger Agent, Chicago Great Western Rd., Toronto, born at Morrisburg, Ont., Feb. 1, 1877.

B. H. Bennett, General Agent, Chicago and North Western Ry., Toronto, born at Cobourg, Ont., Feb. 6, 1858.

F. L. C. Bond, Division Engineer, Eastern Lines, G.T.R., Montreal, born there Feb. 21, 1877.

C. H. Booth, Local Freight Agent, Midland Ry. of Manitoba, Winnipeg, born at Banff, Scotland, Feb. 16, 1882.

T. Britt, General Fuel Agent, C.P.R., Montreal, born there Feb. 3, 1871.

F. W. Churchill, C.P.R. ticket agent, Collingwood, Ont., born in London, Eng., Feb. 6, 1853.

H. R. Charlton, General Advertising Agent, G.T.R. and G.T.P.R., Montreal, born at St. Johns, Que., Feb. 9, 1866.

R. Colclough, Assistant to General Superintendent, Intercolonial Ry., Moncton, N.B., born at Bic, Que., Feb. 24, 1871.

F. W. Cooper, A.M. Can. Soc. C.E., Division Engineer, C.P.R., Montreal, born at London, Ont., Feb. 16, 1880.

R. Crawford, Northwest Agent, Northern Navigation Co., Winnipeg, Man., born at Kingston, Ont., Feb. 21, 1870.

R. W. Drew, Division Freight Agent, Kootenay and Boundary Divisions, C.P.R., Nelson, B.C., born at Kingston, Ont., Feb. 17, 1874.

E. A. Evans, M. Can. Soc. C.E., ex-General Manager and Chief Engineer, Quebec Ry., Light and Power Co., Quebec, born at Kensington, London, England, Feb. 26, 1855.

L. O. Genest, General Storekeeper, Western Lines, C.P.R., Winnipeg, born at St. Henri, Levis County, Que., Feb. 16, 1856.

J. H. Guess, General Purchasing Agent, Grand Trunk Ry., Montreal, born at Raleigh, N.C., Feb. 5, 1878.

J. C. Holden, A.M. Can. Soc. C.E., Division Engineer, C.P.R., Winnipeg, born at St. John, N.B., Feb., 1876.

T. C. Hudson, Master Mechanic, C.N.Q.R. and Q. &. L. St. J. Ry., Joliette, Que., born at Brockville, Ont., Feb. 20, 1873.

W. Jackson, C.P.R. Ticket Agent, Clinton, Ont., born there Feb. 4, 1860.

C. Gardiner Johnson, Lloyds' Agent for British Columbia, Vancouver, B.C., born at Dunblane, Scotland, Feb. 8, 1857.

R. S. Logan, Vice President, G.T.R., Montreal, born at St. Louis, Mo., Feb. 13, 1864.

G. L. McCrea, Local Freight Agent, C.P.R., Vancouver, B.C., born at Springtown, Ont., Feb. 9, 1876.

D. McDonald, Superintendent, Montreal and Ste. Flavie District, Intercolonial Ry., Levis, Que., born at Ste. Hyacinthe, Que., Feb. 28, 1862.

T. McNabb, ex-Master Mechanic, Alberta Ry. and Irrigation Co., now of Turin, Alta., born in Scotland, Feb. 16, 1849.

J. K. McNeillie, Superintendent, District 1, Eastern Division, C.P.R., Farnham, Que., born at Toronto, Feb. 23, 1874.

D. C. Macdonald, Division Freight Agent, C.P.R., Regina, Sask., born at Elmsdale, N.S., Feb. 9, 1874.

C. S. Maharg, Superintendent of Terminals, C.P.R., Calgary, Alta., born in Dufferin County, Ont., Feb. 4, 1867.

D. MacPherson, M. Can. Soc. C.E., Assistant to Chairman, National Transcontinental Ry. Commission, Ottawa, born at Bath, Ont., Feb. 2, 1858.

G. A. Montgomery, Superintendent, Algoma Central and Hudson Bay Ry., and Algoma Eastern Ry., Sault Ste. Marie, Ont., born at Bradford, Ont., Feb. 11, 1871.

A. Z. Mullins, Commercial Agent, G.T.R., Grand Rapids, Mich., born at Appin, Ont., Feb. 14, 1862.

M. G. Murphy, District Passenger Agent, C.P.R., Toronto, born at Halifax, N.S., Feb. 26, 1878.

G. J. O'Dowd, City Freight Agent, C.P.R., Quebec, born at Montreal, Feb. 4, 1874.

J. E. Proctor, District Passenger Agent, C.P.R., Regina, Sask., born at Sarnia, Ont., Feb. 17, 1878.

A. H. Robinson, Superintendent, Elgin and Havelock Ry., Havelock, N.B., born at Elgin, N.B., Feb. 2, 1862.

J. E. Robitaille, Comptroller, Ha Ha Bay Ry., Chicoutimi, Que., born at Quebec, Feb. 17, 1870.

A. E. Rosevear, Assistant to Vice President, G.T.R., Montreal, born Feb. 20, 1863.

H. H. Schaefer, Division Freight Agent, Intercolonial Ry., St. John, N.B., born at Cologne, Germany, Feb. 10, 1848.

J. G. Scott, ex-General Manager, Quebec and Lake St. John Ry., Quebec, born there Feb. 13, 1847.

J. J. Scully, General Superintendent, Lake Superior Division, C.P.R., North Bay, Ont., born at Montreal, Feb. 3, 1872.

G. Spencer, Superintendent, C.P.R., Sudbury, Ont., born in London, Eng., Feb. 21, 1865.

H. E. Suckling, Treasurer, C.P.R., Montreal, born at Gibraltar, Feb. 27, 1851.

Hugh Sutherland, Executive Agent, Canadian Northern Ry., Winnipeg, Man., born at New London, P.E.I., Feb. 22, 1845.

Sir Wm. C. VanHorne, K.C.M.G., Director, C.P.R., and President, Cuba Co., Montreal, born in Will County, Ill., Feb. 3, 1843.

F. L. Wanklyn, M. Can. Soc. C.E., General Executive Assistant, C.P.R., Montreal, born at Buenos Ayres, Feb. 25, 1860.

Canadian Northern Railway Earnings, Etc.

Gross earnings, working expenses, net earnings, increases, or decreases, compared with those for 1911-12, from July 1, 1912:—

	Gross Earnings	Expenses	Net Earnings	Increase
July	$1,829,700	$1,335,100	$494,600	$133,000
Aug	1,745,800	1,375,000	370,800	6,100
Sept	1,671,500	1,248,000	423,500	4,100
Oct	2,351,200	1,645,900	705,300	24,900
Nov	2,509,700	1,631,900	877,800	212,600
	$10,107,900	$7,235,900	$2,872,000	$430,700
Inc	$1,604,600	$1,173,900	$430,700	

Approximate gross earnings for Dec., $2,131,700, against $1,831,400 for Dec., 1911.

The mileage in operation at Nov. 30 was 4,297.

Canadian Pacific Railway Earnings, Etc.

Gross earnings, working expenses, net earnings, increases or decreases, compared with those for 1911-12, from July 1, 1912:—

	Gross Earnings	Expenses	Net Earnings	Increase
July	$12,052,398.58	$7,604,221.68	$4,448,176.90	$745,148.57
Aug.	12,251,715.87	7,533,790.21	4,717,925.66	642,354.65
Sept.	11,579,733.98	7,329,430.13	4,250,303.85	332,857.05
Oct.	13,060,397.80	7,999,510.61	5,060,887.19	379,782.44
Nov.	12,362,666.42	8,104,527.38	4,258,139.04	270,772.55
	$61,306,912.65	$38,571,480.01	$22,735,432.64	2,370,915.26
Inc	$9,395,418.33	$7,024,503.07	$2,370,915.26	

Approximate gross earnings for Dec., $12,108,000, against $10,568,000 for Dec., 1911.

Commencing with Jan. 1, the mileage in operation was increased to 11,458.

Grand Trunk Railway Earnings, Etc.

The following figures show the earnings and expenses of the G.T.R., C.A.R., G.T. Western Ry. and D.G.H. & M.R. for Nov., 1912, as compared with those for Nov., 1911:—

Grand Trunk Railway.

	1912.	1911
Earnings	$3,534,500	$3,152,800
Expenses	2,820,800	2,489,200
	$ 713,700	$ 663,600

Canada Atlantic Railway.

	1912.	1911.
Earnings	$223,500	$188,100
Expenses	211,400	163,800
	$ 12,100	$ 24,300

Grand Trunk Western Railway.

	1912.	1911.
Earnings	$621,000	$534,200
Expenses	523,800	424,600
	$97,200	$109,600

Detroit, Grand Haven and Milwaukee Ry.

	1912.	1911.
Earnings	$243,400	$226,000
Expenses	197,600	160,000
	$ 45,800	$66,000

TRAFFIC RECEIPTS OF THE SYSTEM

Aggregate from July 1 to December 31:

	1912	1911	Increase
G.T.R.	$22,408,122	$20,129,268	$2,278,854
C.A.R.	1,271,732	1,095,906	175,826
G.T.W.R.	3,745,760	3,428,738	317,022
D.G.H. & M.R.	1,329,057	1,231,301	97,756
Totals	$28,754,671	$25,885,213	$2,869,458

The Largest Individual Bridge Contract placed in Great Britain since that for the Forth Bridge has recently been secured by British firms in competition with those of Belgium, Germany and the United States. This contract comprises all the steel work for the railway and highway bridge to carry the Eastern Bengal State Ry. across the Lower Ganges, between Damukdea and Tera Ghat, India. The bridge, exclusive of approaches, comprises 15 main spans, each 359 ft. long and 52 ft. deep. These spans weigh about 1,300 tons each. The bridge will carry two broad gauge railway tracks and a footwalk supported on cantilevers from the main girders. The pier foundations for the main spans are carried to a depth of 150 ft. below the bed of the Ganges to guard against the deep scour of the river. The entire project involves an expenditure of about $6,000,000.

Railway Rolling Stock Notes.

The G.T. Pacific Ry. has received 4 con[illegible] from the Canadian Locomotive Co.

[illegible] Canadian Car and Foundry Co.

The Canadian Steel Foundries, Ltd., has received 6 slag cars from the Canadian Car and Foundry Co.

The Algoma Central and Hudson Bay Ry. has received 4 second class cars from the Preston Car and Coach Co.

The Intercolonial Ry. has ordered 5 refrigerator cars from E. E. Armstrong, Fal[illegible], N.S., and 50 box cars from its Moncton shops.

J. D. McArthur Co., railway contractors, have ordered 100 Hart ballast cars, 40 tons capacity, from the Hart-Otis Car Co. They will be built by the Canadian Car and Foundry Co.

The Canadian Northern Ry., between Dec. 15, 1912, and Jan. 15, ordered 250 [illegible] cars from the National Steel Car Co. and 100 refrigerator cars from the Mount Vernon Car Mfg. Co.

The Algoma Eastern Ry. has received 13 fifty ton Otis dump cars and 1 forty ton steel underframe flat car from the Canadian Car and Foundry Co., and 1 second class car from the Preston Car and Coach Co.

The Canadian Northern Ry. has ordered, from the National Steel Car Co., 200 steel underframe cars, 41 ft. long, 40 tons capa[illegible]; 598 standard 30 ton box cars, 36 ft. long, and 9172 I beam brake beams, 5 ins. [illegible].

The Toronto, Hamilton and Buffalo Ry. [illegible] box cars, 100 flat cars, 36 ft. long, and 150 steel hopper bottom coal cars, 50 tons capacity, from the National Steel Car Co.; and 50 Hart convertible cars from the Hart-Otis Car Co.

The C.P.R., between Dec. 13 and Jan. 13, placed orders for the following rolling stock:—20 stock cars, 2 freight refrigerator cars, 7 vans and 7 flat cars, with its Angus Shops; one Atlantic steam shovel, with Mussens, Ltd.; and 100 air dump cars, with the Western Wheeled Scraper Co.

The G.T.R. has received the following additions to rolling stock.—1 first class car and 5 baggage cars from its Montreal shops; 25 refrigerator cars and 293 box cars from the Canadian Car and Foundry Co.; 8 Pacific type locomotives from the Baldwin Locomotive Works, and 598 box cars from the Pressed Steel Car Co.

The Canadian Northern Ry., between Dec. 15, 1912, and Jan. 15, received the following additions to rolling stock,—8 cabooses from its Winnipeg shops; 2 first class cars, from the Canadian Car and Foundry Co.; [illegible] and 20 [illegible] cars from [illegible] Co.

The Intercolonial Ry. has received the following additions to rolling stock:—106 box cars from Nova Scotia Car Works; 50 Hart-Otis coal cars, [illegible] capacity, built by Canadian Car and Foundry Co., from Hart-Otis Car Co.; 10 refrigerator cars from Canadian Car and Foundry Co.; 2 locomotives from Canadian Locomotive Co.; 1 steel plough from Wendell and McDuffie, New York.

The C.P.R., between Dec. 13 and Jan. 13, received the following additions to rolling stock:—21 flat cars, 10 first class cars, 1 double track snow plough, 1 double track flanger, 18 single track snow ploughs, and 7 locomotives, class D.4, from its Angus shops; 511 box cars from the Canadian Car and Foundry Co.; 19 locomotives, class D. 10, from the Montreal Locomotive Works; 353 box cars, from the Standard Steel Car Co.; 280 box cars, from Barney and Smith Car Co.; and 523 box cars from the American Car and Foundry Co.

The Canadian Car and Foundry Co., between Dec. 15 and Jan. 15, delivered the following rolling stock:—13 Otis dump cars, 50 tons capacity; 1 steel underframe flat car, 40 tons capacity, to the Algoma Eastern Ry.; 483 steel frame box cars, 40 tons capacity, to the C.P.R.; one first class car to the Canadian Northern Ry.; 6 slag cars to the Canadian Steel Foundries, Ltd.; 344 steel underframe box cars, 30 tons capacity, to the G.T.R.; 1 refrigerator car, 30 tons capacity, to the G.T. Pacific Ry.; 14 Hart convertible coal cars, 50 tons capacity, 54 steel underframe flat cars, 40 tons capacity, and 6 steel underframe stock cars, 30 tons capacity, to the Intercolonial Ry.; 6 steel street car bodies to the Montreal Tramways Co.; one snow plough to the Quebec Oriental Ry., and is building one steel box car, 40 tons capacity, for its own purposes.

The Quebec Harbor Commission has ordered 3 six wheeled switching locomotives from the Montreal Locomotive Works. Following are the chief details:—

Cylinders	[illegible]
Tractive power	[illegible]8,720 lbs.
Factor of adhesion	4.19
Wheel base, engine	11 ft. [illegible] ins.
Wheel base, engine and tender	[illegible] ft. 7 ins.
Weight in working order	120,400 lbs.
Weight, engine and tender	[illegible]
Boiler, type	Straight top
Boiler, outside diar. first ring	[illegible] ins.
Boiler pressure	180 lbs.
Firebox, type	Narrow
Firebox, length and width	102 x 33 ins.
Crown staying	Radial
Tubes, no. and diar.	259. 2 ins.
Tubes, length	11 ft.
Heating surface, tubes	1,480 sq. ft.
Heating surface, firebox	140 sq. ft.
Heating surface, total	1,620 sq. ft.
Grate, area	23.4 sq. ft.
Driving wheels, outside diar	50 ins.
Axles	[illegible]
Journal boxes	Cast steel
Brakes	Westinghouse American
Tank, type	U shape, sloping top
Capacity, water	3,500 U.S. gals.
Capacity, coal	[illegible] tons

The Toronto, Hamilton and Buffalo Ry. has ordered 2 superheater six wheeled switching locomotives, type S137, one superheater six wheeled switching locomotive, type S165, and one superheater Pacific passenger locomotive, from the Montreal Locomotive Works. Following are the chief details:—

	Type S137	Type S165
Cylinders, diar. and stroke	20 by 26 ins.	21 by 28 ins.
Tractive power	[illegible] lbs.	[illegible] lbs.
Factor of adhesion	4.39	4.46
Wheel base, engine	10 ft., 6 ins.	11 ft. 6 ins.
Wheel base, engine and tender	43 ft. 2 ins.	45 ft. 4½ ins.
Weight, engine	137,000 lbs.	165,000 lbs.
Weight, engine and tender	247,000 lbs.	275,000 lbs.
Boiler, type	Straight top	Straight top
Boiler, outside first ring	64¼ ins.	67¼ ins.
Fire, type	Wide	Wide
Firebox	[illegible]	72 by [illegible] ins.
Crown staying	Radial	Radial
Tubes, no. and diar.	154 [illegible] ins.	165 [illegible] ins.
Flues, no. and diar.	21 [illegible] ins.	24 [illegible] ins.
Tubes, length	10 ft. 9 ins.	16 ft.
Heating surface, tubes & flues	1,183 sq. ft.	1,879 sq. ft.
Heating surface, firebox	146 sq. ft.	129 sq. ft.
Heating surface, total	1,350 sq. ft.	2,021 sq. ft.
Grate area	29.9 sq. ft.	32.7 sq. ft.
Driving wheels, diar.	51 ins.	[illegible] ins.
Tender wheels	33 ins.	33 ins.
Journals	8½ x 10 ins.	9 x 12 ins.
Journal boxes	Cast steel	Cast steel
Brakes	Westinghouse American	
Tank, type	U, level top	U, straight top
Capacity, water	[illegible] U.S. gals.	[illegible] U.S. gals.
Capacity, coal	[illegible] tons	[illegible] tons

Pacific Type.

Cylinders, diar. and stroke	[illegible]
Tractive power	32,800 lbs.
Factor of adhesion	4.2
Wheel base, driving	[illegible] ft.
Wheel base, engine, total	3[illegible] ft. 7 ins.
Wheel base, engine and tender	67 ft.
Weight in working order	219,000 lbs.
Weight on drivers	138,000 lbs.
Weight on trailers	41,000 lbs.
Weight on engine truck	40,000 lbs.
Weight, engine and tender	[illegible]
Boiler, type	Extended wagon top
Boiler, diar. first ring	64 ins.
Boiler, working pressure	[illegible] lbs.
Firebox, type	Wide
Firebox, length and width	108 by 65¼ ins.
Crown staying	Radial
Tubes, no. and diar.	177. 2 ins.
Flues, no. and diar.	26 5½ ins.
Tubes, length	20 ft.
Heating surface, tubes and flues	2,575 sq. ft.
Heating surface, firebox	165 sq. ft.
Heating surface, total	2,768 sq. ft.
Grate area	49 sq. ft.
Driving wheels, diar.	69 ins.
Journals	Main 10 by 12, others 9 by 12 ins.
Journal boxes	Cast steel
Air brakes	Westinghouse American
Tank, type	Water bottom
Capaciy, water	9,000 U.S. gals.
Capacity, coal	12 tons

Referring to the information as to additions to rolling stock by the G.T.R., given in our last issue, it was mentioned that 18 locomotives had been received from the Baldwin Locomotive Works, but it should have read as 13.

Recent Quebec Legislation.

At the recent session of the Quebec Legislature the following acts were passed affecting transportation interests:—

ALMA AND JONQUIERES RY.—Incorporation.

CALUMET AND NORTHERN RY.—Incorporation.

HUNTINGDON AND HEMMINGFORD Ry.—Incorporation.

L'AVENIR AND MELBOURNE RY.—Extending time for construction.

LITTLE NATION RY.—Extending time for construction.

QUEBEC AND NORTHEASTERN RY.—Incorporation.

RAILWAY ACT.—Amending Quebec Rail- Act with respect to expropriation proceedings.

RAILWAY SUBSIDIES.—Amending act of 1912 granting subsidies in aid of certain railways.

ROBERVAL AND SAGUENAY RY. — Extending time for construction.

SAGUENAY HYDRAULIC CO.—Granting company right of expropriation under Quebec Railway Act.

Dominion Railway Subsidy Agreements.

The Dominion Government has entered into agreements, under the acts granting aid for the construction of railways, with the following companies:—

Esquimalt and Nanaimo Ry., Oct. 19, for line from Wellington to Alberni, B.C., 60 miles.

St. John and Quebec Ry., Nov. 5, for line from St. John to Grand Falls, N.B., exclusive of railway bridge over the Kennebecasis river near Perry point, and two railway bridges over the St. John river, 228 miles.

Canadian Northern Alberta Ry., Nov. 29, guaranteeing principal and interest of company's securities to extent of $35,000 a mile for line from 150 miles west of St. Albert westerly to British Columbia boundary, in Yellowhead Pass, 115 miles.

Algoma Central and Hudson Bay Ry., Dec. 28, from the C.P.R. northerly towards the National Transcontinental Ry., not exceeding 50 miles; from 50 miles northerly from the junction with the C.P.R. northerly to the National Transcontinental Ry., not exceeding 65 miles.

Canada Southern Ry.—It was reported in New York, Jan. 9, that $16,500,000 of the C.S. Ry. consolidated guaranteed 5% bonds had been taken up, and that the remaining $6,000,000 were being exchanged for C.S. Ry. second mortgage 5% bonds.

Western Dominion Ry.—The Minister of Railways has approved of route map for this projected railway from tp. 6, r. 1, west 5th meridian, to near Calgary, Alta., 130 miles. (Dec., 1912, pg. 605.)

Steam Railway Track Laid in 1912.

In the figures published in last month's issue respecting track laid in 1912, as officially reported by the companies to Canadian Railway and Marine World, a total of 2,099.79 miles was shown. A number of revised figures and additions have since been received, which brings the total mileage laid up to 2,179.09, against 1,869.24 miles laid in 1911. In the figures published by a U.S. contemporary, and reproduced in one or two Canadian publications, the total mileage laid in Canada is given as 2,232.10, in which is included the Alberta Central Ry., 65 miles, in regard to which we were officially advised, Jan. 13, that no track whatever was laid in 1912; about 50 miles of C.P.R. branch lines, in reference to which the reports furnished us give a smaller mileage to the total extent mentioned; and over six miles on the Timiskaming and Northern Ontario Ry., which is now being laid. Our table includes returns from five lines, representing nearly 70 miles, which are not included in our contemporary's table.

The statement that the Edmonton, Dunvegan and British Columbia Ry. laid 8 miles of track north from Edmonton, first published in our January issue, was based on a report received from a correspondent in Edmonton, to whom we wrote after failing to obtain any information from the railway company. We have since heard from another source that the company claims to have laid 23 miles of track, and although we have been unable to verify this, we have inserted the latter figures in our table. Following are the details:—

	Miles.	Miles.
Algoma Central and Hudson Bay Ry.—		
Mileage 97 to 117	20.00	
Mileage 194.5 to 244.5	50.00	
		70.00
Algoma Eastern Ry.—		
Mileage 22.7 to 43.00	20.30	
Mileage 49.75 to 84.95	35.20	
		55.50
British Columbia Electric Ry.—		
Port Moody to Coquitlam (steam line).		8.70
British Yukon Ry.—		
Mileage 106 to Pueblo mines		13.00
Canadian Northern Ontario Ry.—		
On Toronto Ottawa line	45.00	
Between Ottawa and Capreol	35.00	
Between Ruel and Port Arthur	115.00	
		195.00
Canadian Northern Pacific Ry.—		
Sumas to Hope		41.75
Canadian Northern Ry.—		
Manitoba—		
Winnipeg Northern Ry.	0.62	
Saskatchewan—		
Melfort Humbolt line	4.69	
Moose Jaw line	2.00	
Delisle extension	3.70	
Alberta—		
Goose Lake line extension	100.02	
Can. Nor. Alberta line	50.42	
Vegreville-Calgary line	24.92	
Strathcona Camrose	46.00	
Morinville line	17.00	
Brazeau line	45.26	
	283.62	
Canadian Pacific Ry.—		303.63
Ontario—		
From Flamboro to T. H. & B. Jct.	10.42	
Manitoba—		
Lauder Boissevain branch	1.80	
Tilston Westerly in Manitoba	3.20	
	5.00	
Saskatchewan—		
Tilston West in Saskatchewan	22.30	
Weyburn westerly	36.80	
Moosejaw southwest	7.80	
Swift Current south east	16.70	
Swift Current south west	23.80	
Estevan north west	20.00	
Wilkie-Anglia branch	35.40	
	162.80	
Alberta—		
Lacombe east	32.80	
Bassano Irricana	36.50	
Suffield south west	26.80	
	96.10	
British Columbia—		
Golden south	41.00	
Colvalli north	14.50	
Caithness south	11.00	
Laggan Lake Louise	4.00	
Three Forks-Whitewater	5.37	
Port Moody spur	3.60	
	79.47	353.79
Central Ry. of Canada—		
Hawkesbury west		2.50
Dominion Atlantic Ry.—		
Main Line to Canning wharf, N.S.	0.69	
Centreville to Belltown, N.B.	0.31	
		1.00
Edmonton, Dunvegan and B.C. Ry.—		
Edmonton, Alta., to near Morinville		23.00
Esquimalt and Nanaimo Ry.—		
Hayward Jct. to Cowichan Lake, B.C.	18.20	
Osborne Bay Jct. to Osborne Bay, B.C.	2.60	
		20.80
Fredericton and Grand Lake Coal and Ry. Co.—		
Gibson, N.B., to mileage 11	11.00	
Near Minto to Ripples	7.00	
		18.00
Grand Trunk Pacific Ry.—		
Main Line between Yellowhead Pass and Prince Rupert, B.C.	128.00	
Regina towards Int. Boundary	136.00	
Regina to Moose Jaw, Sask	40.00	
Talmage to Weyburn, Sask.	0.25	
Oban to Battleford, Sask.	48.50	
Biggar towards Calgary	104.00	
Battleford towards Wainwright	4.00	
Tofield towards Calgary, Alta.	92.00	
Bickerdike to Brazeau, Alta	56.00	
		608.75
Intercolonial Ry.—		
Diversion of line between Nelson and Chatham, N.B.	8.30	
Diversion of line between Georges River and Sydney Mines, N.S.	9.00	
		17.30
Kettle Valley Ry.—		
On several sections		30.00
Port Moody and North Shore Ry.—		
Port Moody line		15 1
Prince Edward Island Ry.—		
Harmony Jct to Elmira		9.90
Timiskaming and Northern Ontario Ry.—		
Earlton to Montreal River, Ont		22.70
Vancouver, Victoria and Eastern Ry.—		
Abbottsford to Kilgard, B.C.	4.52	
Kilgard to Sumas Landing	3.00	
		7.52
National Transcontinental Ry.—		
At various points between:		
Mileage 109 and 153 E. of Quebec Bridge	33.00	
Mileage 1 and 8.6 E. of Quebec Bridge	7.50	
Mileage 288 and 419 W. of Quebec Bridge	84.75	
Mileage 168 west of Cochrane and 102 east of Lake Superior Jct., Ont.	235.90	
		361.15
Total		2,179.09
Actual track laid in 1911		1,851.98

Of this mileage, 1,860.07 miles were laid in connection with three systems, the following being the comparison of the mileages laid by the same lines in 1911:—

	1911 Miles.	1912 Miles.
Canadian North Eastern	11.00	.. ..
Canadian Northern Ontario	75.20	195.00
Canadian Northern Pacific	46.00	41.75
Canadian Northern Ry.	446.10	303.63
	578.30	540.38
Canadian Pacific	465.20	353.79
National Transcontinental	280.25	361.15
Grand Trunk Pacific	54.00	608.75
	534.25	969.90
Total of the three systems	1,577.75	1,864.07

The remaining 314.93 miles were laid by 13 companies.

In addition to the new mileage the C.P.R. laid 300.33 miles of second track, 30.33 miles being in Quebec, 59.40 in Ontario, 86.60 in Saskatchewan, and 24.00 in British Columbia.

The Minneapolis, St. Paul and Sault Ste. Marie Ry., a C.P.R. subsidiary, laid 103.93 miles from Fordville to Drake, N.D. The Duluth, Winnipeg and Pacific Ry., a Canadian Northern subsidiary, laid 73.4 miles in Minnesota.

Divided by provinces the track laid compares as follows:

	1912 Miles.	1911 Miles.
Ontario	[illegible]	[illegible]
Alberta	[illegible]	[illegible]
Saskatchewan	501.94	[illegible]
British Columbia	331.34	216.00
Quebec	[illegible]	
New Brunswick	26.61	[illegible]
Manitoba	[illegible]	
Yukon	13.00	
Nova Scotia	9.60	[illegible]
Prince Edward Island	9.90	
	2,179.09	1,851.98

Grand Trunk Railway Betterments, Construction, Etc.

Construction for 1913.—We are officially advised that the undermentioned works are more or less definite as to construction and completion during 1913:

Lachine, Jacques Cartier and Maisonneuve Ry.—From Jacques Cartier Jct. to the east end of Montreal, 7.00 miles.

Port Hope Cut off.—About one mile to connect the Northern Divison with the Eastern Division at Port Hope, Ont.

Holmedale Spur.—From West Brantford, Ont., to the Holmedale industrial area, about 3 miles.

Erie, London and Tillsonburg Ry.—From Port Burwell to London, Ont., about 34 miles.

Detroit and Huron Ry.—From Cass City to Bad Axe, Mich., 68.5 miles. (Jan., pg. 30.)

Kingston, Ont.—E. J. Chamberlin, President, has informed the Kingston City Council that it would cost about $1,000,000 to divert the main line through Kingston. While the change would be desirable, the company cannot, owing to the financial situation, consider making it.

Montreal Track Elevation Project.—The City Board of Control has decided to obtain an estimate of the cost of depressing the G.T.R. tracks in the city. The question of elevating them has been under consideration for several years.

Portland, Me.—Press reports state that a large area of land on the east end of Portland has been acquired by the G.T.R. R. S. Logan, Vice President, is quoted as stating, Jan. 17, that the company has made an exchange with the Portland Parks Commission, the G.T.R. securing some water front land for land on a higher level.

Toronto Yards.—A plan has been submitted to the Toronto City Council for a new 26 stall locomotive house with machine shop attached near the foot of John Street. Seven tracks are shown leading to it. The building is intended to replace some existing buildings.

New Brunswick Coal and Ry. Co.—Central Ry., of N.B. — We are officially advised in connection with the press reports that the C.P.R. had made arrangements to take over these lines from the New Brunswick Government, Jan. 1, that no decision has been reached in regard to them. The taking over of these lines by the C.P.R. is a part of the bargain made with the New Brunswick Government in connection with the building of the Fredericton and Grand Lake Coal and Ry. Co.'s line, which connects the C.P.R. system with Minto, the terminus of the N.B.C. and Ry. Co.'s line.

The Canadian Ticket Agents' Association has admitted to membership C. Casselman, C.P.R., Chesterville, Ont., and L. Atkinson, Newmarket, Ont.

Mainly About Transportation People.

J. A. McKEE, Western Steamship Co., who died in Toronto recently, left an estate of $532,958.

C. GREENWOOD, for many years in the C.P.R. [illegible]

GEORGE BURY, Vice President, C.P.R., left Winnipeg, Jan. 20, for a trip to Japan expecting to return about Mar. 21.

SIR WM. WHYTE, of Winnipeg, has been elected Vice President for Manitoba of the Canadian Red Cross Society.

B. A. MACNAB, at one time in the Intercolonial Ry. service, has resigned his position as editor of the Montreal Star.

W. J. CROSSEN, President, Crossen Car Co., has been elected Honorary President of the Cobourg, Ont., Horse Show Association.

Mrs. King, wife of R. KING, Superintendent, C.P.R., London, Ont., died there Jan. 9, and was buried at St. Stephen, N.B.

H. J. FULLER, President, Canadian Fairbanks-Morse Co., Montreal, has been elected a director of the Canadian Bank of Commerce.

J. W. TROUP, Manager, British Columbia Coast Service, C.P.R., sailed from St. John, N.B., Jan. 10, on the s.s. Empress of Britain, for England.

CHARLES BERESFORD FOX, M. Can. Soc. C.E., of Wragge & Fox, Toronto, who died there in April, 1912, left an estate valued at $65,158, mostly in England.

J. A. GLASSFORD, formerly Superintendent of the Fort Garry Joint Terminals, Winnipeg, has been appointed industrial and publicity agent at Portage la Prairie, Man.

SIR FREDERICK W. TAYLOR, Manager of the Bank of Montreal in London, Eng., who was knighted by the King at the New Year, is a director of the Allan Steamship Line.

F. H. PHIPPEN, General Counsel, Canadian Northern Ry., accompanied by his wife and son, left Toronto Jan. 21 for New York, whence they sailed for England, en route for Egypt.

J. S. DARLING, of the Canadian Northern Ry. Land Department in Montreal, has been elected first Mayor of Mount Royal, the C.N.R. model city at the back of Mount Royal, Montreal.

A. L. CODY, who was employed as an inspector of construction at the C.P.R. yards, St. Boniface, Man., disappeared Oct. 18. His friends are offering a reward for news of his whereabouts.

S. W. FURNESS, M.P., has succeeded the late Lord Furness, his uncle, as Chairman of Furness, Withy and Co., and other shipping interests with which both have been associated for several years.

MRS. JAMES WILSON, whose husband [illegible] Claims Agent, Ontario Division, C.P.R., Toronto, and before that General Superintendent, Ontario Division, died in Toronto, Jan. 14, aged 78.

T. McKEAG, of the local freight staff of the [illegible] was presented with a cabinet of silver, Jan. 18, by the staff, on the occasion of his marriage to Miss E. Roland, of the same office.

J. McDOUGALD, Cornwall, Ont., who celebrated his golden wedding Jan. 9, was active in promoting the building of the original Canada Atlantic Ry., and was Secretary-Treasurer of the company for about ten years.

W. BORBRIDGE, Master Mechanic, C.P.R., District 3, Montreal, was presented with a gold watch and chain by the staff, Dec. 31, on his being transferred to a similar position on the Montreal Terminals and Montreal-Smiths Falls district.

W. L. KELLOGG, heretofore Superintendent of Motive Power, Pere Marquette Rd., Grand Rapids, Mich., has been appointed Superintendent of Machinery and Equipment, Missouri, Kansas and Texas Ry. of Texas, at Parsons, Kan.

H. HOLGATE, M. Can. Soc. C.E., of Montreal, and D. Moran and C. Sooysmith, of New York city, were elected members of council for three years of the American Institute of Consulting Engineers at the annual meeting Jan. 14.

JAS. ROSS, Montreal, with a party of friends, is making an extended tour in his yacht Glencairn. He reached Bermuda Jan. 2, and was expected in the Canary Islands Jan. 20, after which he proposed to visit Madeira, Gibraltar and Mediterranean ports.

A. D. MacTier,
General Manager, Eastern Lines, Canadian Pacific Railway.

ROSWELL MILLER, Chairman of the Board, Chicago, Milwaukee and St. Paul Ry., and President, between 1888 and 1899, died at New York, Jan. 3. He was born at Hartford, Pa., Oct. 28, 1843, and retired from the Presidency on account of ill health.

J. LUMSDEN, owner of the Lumsden Line of steamboats on Lake Timiskaming, Que. and Ont., has given the Bellevue hotel and grounds at the foot of Lake Timiskaming, Que., to the National Sanitarium Association. The property is valued at $55,000.

V. H. WILLIAMS, who has been appointed Travelling Freight Agent, Western United States, Intercolonial and Prince Edward Island Rys., Chicago, Ill., was born at Litchfield, Ill., Jan. 24, 1892, and has served with the I.R.C., in the U.S., since Dec. 15, 1910.

F. W. EMMERSON, Judge of the Probate Court, Westmoreland county, N.B., who died at Moncton, N.B., Jan. 6, was father of R. H. Emmerson, Resident Engineer, Intercolonial Ry., Levis, Que., and brother of Hon. H. R. Emmerson, formerly Minister of Railways and Canals.

W. W. JOHNSTON was presented with a gold watch by his colleagues recently on his resignation of the position of City Freight and Passenger Agent, Canadian Northern Quebec Ry., and Quebec and Lake St. John Ry., Quebec, to take an appointment in the Provincial Treasury Department.

HON. ARCHIBALD CAMPBELL, who died at Toronto Jan. 5, was until recently President of the Central Ry. Co. of Canada. He was father-in-law of G. S. Deeks, President, Dominion Construction Co., contractors for the construction of the Campbellford, Lake Ontario and Western Ry. (C.P.R.).

JOHN M. BOAK, who has been appointed Travelling Freight Agent, Intercolonial Ry., was born at Halifax, N.S., May 13, 1877, is a son of J. A. Boak, Western U.S. Freight Agent, I.R.C., Chicago, Ill. Prior to his appointment, Dec. 23, 1912, he was engaged in private business in Chicago.

JAMES PLAYFAIR, President, Northern Navigation Co., Midland, Ont., is President of Mexican Mahogany and Rubber Corporation, Ltd., bonds of which have been offered to the public recently. H. W. Richardson, of James Richardson and Sons, vessel owners, Kingston, Ont., is also a director.

JNO. McLEAN, who died in Montreal, Jan. 4, aged 81, was for over 60 years well known in connection with the marine interests of the city. At different times he represented the Montreal Transportation Co., the Kingston and Montreal Forwarding Co., and latterly was associated with the Inland Lines.

R. O. MACKAY, the senior partner of the former firm of R. O. & A. B. Mackay, vessel owners, Hamilton, died there, Jan. 26, aged 59. The vessels owned by his firm were taken over some time ago by Inland Lines, Ltd., which latter company has since been absorbed by the Richelieu and Ontario Navigation Co.

D. B. HANNA, Third Vice President, Canadian Northern Ry., was among a deputation which waited on the Ontario Minister of Agriculture recently to urge that a larger grant be given the Toronto Women's Hostel. He stated that the organization had promoted the immigration of a better class of girls and women.

C. ELSON, a sub-contractor on the Canadian Northern Ontario Ry., left his camp recently to walk to Nemegos, on the C.P.R., for a trip home to Sweden. His body was found in the snow some distance from the C.P.R., Dec. 24. A large sum of money he carried was missing, and there is every evidence that he met with a violent death.

SIR WILLIAM MACKENZIE was dismissed from a case, Jan. 16, in which he was joint defendant with the Toronto Ry. Co., in which damages were claimed for injury sustained by a pedestrian who claimed to have been knocked down by the company's automobile, something over two years ago, in which Sir William was a passenger.

GEO. HANNAH, who recently resigned his position as Passenger Manager, Allan Line Steamship Co., Montreal, was entertained to dinner there, Jan. 15, by a number of transportation officials, on the occasion of his retirement from active service after 45 years as a steamship official. He was presented with a silver tea service and tray, suitably inscribed.

C. W. PRICE, who has been appointed Chief Dispatcher, Intercolonial Ry., Moncton, N.B., was born in New Brunswick July, 1867, and entered I.R.C. service Oct., 1882, since when he has been, to June, 1886, operator at Petitcodiac, N.B.; June, 1886, to

Nov., 1888, operator, Moncton, N.B.; Nov. 1888, to May 15, 1893, relief dispatcher; May 15, 1893, to Nov. 25, 1912, trick dispatcher, Moncton, N.B.

E. W. DAHL, Travelling Freight Agent, G.T.R., Cincinnati, Ohio, and his six year old son, were killed by a freight train while crossing a trestle near there, Jan. 1. He had been in G.T.R. service for about 20 years, and had been located in Cincinnati for six years, having previously been stationed at Detroit, Mich. He was First Vice President and a director of the Cincinnati Transportation Club.

HON. F. COCHRANE, Minister of Railways; C. Murphy, General Superintendent of Transportation; W. Stitt, General Passenger Agent, Eastern Lines; H. E. Macdonell, General Freight Agent, Eastern Lines, and G. H. Ham, of the Publicity Department of the C.P.R., were guests at a dinner given by the Orillia Board of Trade Jan. 10, in connection with the recent advent of the C.P.R. into Orillia, through its Georgian Bay and Seaboard line.

M. A. FULLINGTON, who has been appointed Assistant Division Engineer, Eastern Division, C.P.R., Montreal, was born at Johnson, Vt., May 12, 1880, and entered C.P.R. service Oct., 1904, since when he has been, to Apr., 1907, rodman, transitman, and Assistant Engineer of Terminals, London and Toronto; Apr., 1907, to Feb., 1912, Resident Engineer, districts 1 and 4, Ontario Division; Feb., 1912, to Jan. 1, 1913, Engineer, Dominion Atlantic Ry., Kentville, N.S.

B. F. BUSH, M. Am. Inst. M.E., President of the Missouri Pacific Ry., has been elected President of all the so-called Gould railways, including the Missouri Pacific, the Denver & Rio Grande, the Iron Mountain, the Western Pacific, the Texas & Pacific and the International & Great Northern Rys., a system embracing 13,844 miles of track. J. M. Johnson, Vice President of the Missouri Pacific Ry., will be Vice President in charge of traffic of the entire system.

JOHN PATTERSON, who has been active in the promotion of the projected Hamilton, Waterloo and Guelph Ry., died at Hamilton, Ont., Jan. 26, aged 56. He was intimately connected with the origin of what is now known as the Dominion Power and Transmission Co. He had been in ill health for two or three years, but has been to London, Eng., several times in that period, in connection with the financing of his project, but without having brought it to a successful conclusion.

A. D. MacTIER, whose appointment as General Manager, Eastern Lines, C.P.R., Montreal, was announced in our last issue, and whose portrait appears in this issue, was born at Blairgowrie House, Scotland, Dec. 27, 1867, and entered C.P.R. service, May, 1887, since when he has been, to Apr., 1896, successively, in General Baggage Agent's Office, General Superintendent's Office, Superintendent Sleeping, Dining and Parlor Cars Stores, and Car Service Departments; Apr., 1896, to Nov., 1899 General Baggage Agent; Nov., 1899, to June, 1907, General Fuel Agent; June, 1907, to Dec. 31, 1912, Assistant to the Vice President, Montreal.

P. J. FLYNN, who has been appointed Manager of the Canadian Northern, G.T. Pacific and National Transcontinental Rys. joint terminals, Winnipeg, including Fort Garry Union Station, entered Lehigh Valley Rd. service in 1893, and has been in charge of the terminals at Manchester, N.Y., and Sayre, Pa.; in a similar position in service of the New York, New Haven and Hartford Rd. at Worcester, Mass., and Providence, Conn. Returning to Lehigh Valley Rd. service Feb. 1, 1907, he was appointed in charge of the terminals at Buffalo, N.Y., and in 1908 was appointed Trainmaster, with jurisdiction over all terminals in the Buffalo division.

F. CONWAY, who has been appointed City Freight and Passenger Agent, C.P.R., Kingston, Ont., was born at Ernestown, Addington county, Ont., Nov. 19,1850. He entered railway service, Aug., 1869, since when he has been, to Feb., 1882, operator at Coteau, Que., relieving and station agent G.T.R.; Feb. to May, 1882, C.P.R. Freight Department; May, 1882, to Jan., 1883, agent Midland Ry. (now part of G.T.R.), Markham, Ont.; Jan., 1883, to Jan. 1, 1913, on the taking over of the line by the C.P.R., General Freight and Passenger Agent Kingston and Pembroke Ry., Kingston, Ont., and since Oct. 1, 1906, also acting General Superintendent.

WALTER E. LADLEY, who has been appointed Superintendent of Motive Power, Reid Newfoundland Co., St. Johns, Nfld., was born in England, and came to this continent at the age of 10 years, his family settling in Port Huron, Mich. He served an apprenticeship of five years in the G.T.R. shops there, as a machinist, and two years after the ending of that time was appointed General Foreman of the same shops. From Jan., 1906, to 1907, he was Master Mechanic, Central Vermont Ry., St. Albans, Vt., and from 1907 to Dec. 26, 1910, was with the Ford Automobile Co., Detroit, Mich., from which latter date to Dec. 31, 1912, he was Shop Superintendent, Chicago and Alton Rd., Bloomington, Ill.

H. J. Herrold,
General Freight and Passenger Agent, Algoma Central and Hudson Bay Ry.

D. J. HACKETT, who has been appointed Superintendent, Canada Division, Michigan Central Rd., St. Thomas, Ont., was born in Cass County, Mich., May 1, 1868, and entered M.C.R. service in 1884, since when he has been messenger, timekeeper, roadman, yard clerk, operator, clerk in Freight Department, clerk to Trainmaster and Assistant Superintendent, switchman, yard conductor, Assistant Yardmaster, Yardmaster, all at Detroit, Mich.; General Yardmaster, Assistant Trainmaster at Toledo, Ohio; Trainmaster, Assistant Superintendent, Middle Division and Branches, Jackson, Mich.; and to Jan. 1, 1913, Assistant Superintendent of Detroit and Toledo Terminals, Detroit, Mich.

H. E. WHITTENBERGER, who has been appointed General Superintendent, Ontario Lines, G.T.R., Toronto, and whose portrait appears in this issue, was born at Peru, Ind., Nov. 9, 1869, and entered transportation service in 1885, since when he has been, to Feb., 1897, in various position, Wabash Rd.; Feb., 1897, to May, 1902, Trainmaster, Middle Division, G.T.R.; May, 1902, to Sept., 1904, Superintendent, Denver and Rio Grande Ry.; Sept., 1904, to Jan., 1906, Superintendent, Cincinnati, Hamilton and Dayton Ry., Indianapolis, Ind.; Jan., 1906, to Sept. 30, 1907, Superintendent, Kansas City Southern Ry.; Sept. 30, 1907, to Oct. 17, 1912, Superintendent, Eastern Division, G.T.R., Montreal; Oct. 17, 1912, to Jan. 14, 1913, Superintendent, Middle Division, G.T.R., Toronto.

J. M. McKAY, whose appointment as Superintendent, District 1, British Columbia Division, Revelstoke, was announced in our last issue, was born at Tiverton, Ont., Mar. 13, 1868, and entered railway service Sept., 1895, since when he has been, to May, 1897, brakeman, Northern Pacific Ry., Winnipeg; May, 1897, to Sept., 1899, brakeman, C.P.R., Winnipeg; Sept., 1899, to Mar., 1906, conductor, C.P.R., Winnipeg; Mar., 1906, to June 10, 1911, Trainmaster, District 2, Central Division, C.P.R., Winnipeg; June 10, 1911, to June 10, 1912, acting Superintendent of Terminals, C.P.R., Winnipeg; June 10 to Aug. 1, 1912, Trainmaster, District 2, Manitoba Division, C.P.R., Winnipeg; Aug. 1 to Dec. 14, 1912, Trainmaster, District 1, British Columbia Division, Revelstoke.

L. J. FERRITOR, who has been appointed Superintendent, Scranton Division, Delaware, Lackawanna and Western Rd., Scranton, Pa., was from July, 1896, to 1898, Trainmaster, Middle Division, G.T.R., Stratford, Ont.; 1898 to May, 1899, Assistant Superintendent, Middle Division, G.T.R., London, Ont.; May, 1899, to Feb., 1904, Joint Superintendent, Southern Division, G.T.R., and Buffalo Division, Wabash Rd., St. Thomas, Ont.; Feb., 1904, to Aug., 1905, Superintendent, Eastern Division, Wabash Rd., Peru, Ind.; Aug., 1905, to 1910, Superintendent, Middle Division, same road, Decatur, Ill.; 1910 to Oct., 1912, Superintendent, Northern and Southern Divisions, Chicago and Alton Rd., Bloomington, Ill., resigning that company's service with F. W. Morse, Vice President and General Manager, who had formerly been Vice President and General Manager, Grand Trunk Pacific Ry.

H. J. HERROLD, who has been appointed General Freight and Passenger Agent, Algoma Central and Hudson Bay Ry., and Algoma Eastern Ry., Sault Ste. Marie, Ont., and whose portrait appears in this issue, was born at Athens, Ohio, Jan. 21, 1880, and entered railway service Sept., 1897, since when he has been, to April, 1898, operator and clerk, Agent's office, Kanawha and Michigan Ry., Ganley Bridge, W. Va.; April to Oct., 1898, operator and clerk, same road, Cedar Grove, W. Va.; Oct., 1898, to July, 1905, Agent, same road, Cedar Grove, W. Va.; July, 1905, to June, 1908, Agent, same road, Athens, Ohio; June, 1908, to April, 1909, Agent, same road, Dickinson, W. Va.; April, 1909, to March, 1911, chief clerk to Traffic Manager, Algoma Central and Hudson Bay Ry., and Algoma Eastern Ry., Sault Ste. Marie, Ont.; March, 1911, to Jan., 1913, General Agent, same roads, Sault Ste. Marie, Ont.

J. W. EBER, who has been appointed General Manager, Toronto, Hamilton and Buffalo Ry., Hamilton, Ont., entered railway service in 1890, since when he has been, to 1902, rodman, draughtsman, transitman and Supervisor of Track, West Shore Rd.;

1902 to 1904, in charge of the Main Line Division, New York Central Lines, Albany, N.Y.; 1904 to 1905, Division Engineer, Rome, Watertown and Ogdensburg Division, New York Central Lines; 1905 to 1909, Assistant Engineer of Maintenance of Way and Engineer of Track of the entire New York Central System, his territory covering nearly 4,000 miles of road; 1909 to 1910, Superintendent, New York Central Stock yards and Terminals, Buffalo, N.Y.; 1910 to May 14, 1912, Superintendent, Adirondack Division, New York Central Lines, Utica, N.Y.; May 14, 1912, to Jan. 1, 1913, General Superintendent, Toronto, Hamilton and Buffalo Ry., Hamilton, Ont.

M. B. DUBE, who has been appointed General Foreman in charge of Transcona shops, G.T. Pacific Ry., Transcona, Man., was born in Quebec, Que., Sept. 6, 1877, and entered railway service Sept., 1891, since when he has been, to 1893, messenger G.T.R., Gorham, N.H.; 1893 to 1902, in G.T.R. shops, Gorham, N.H.; 1902 to Jan. 31, 1904, in charge motive power and car department, Gorham shops; Jan. 31 to Apr., 1904, night foreman G.T.R. shops, Belleville, Ont.; Apr., 1904, to Jan. 1, 1907, in G.T.R. shops, Gorham, N.H.; Jan. 1 to Mar. 1, 1907, locomotive foreman G.T.R., Madawaska, Ont.; Mar. 1, 1907, to Apr. 20, 1908, locomotive foreman G.T.R., Coteau Jct., Que.; Apr. 20, 1908, to Dec. 22, 1909, locomotive foreman G.T.R., Island Pond, Vt.; Jan. 1 to Oct. 1, 1910, locomotive foreman G.T.P.R.; Oct. 1, 1910, to Feb. 4, 1911, locomotive foreman G.T.P.R., Graham, Ont.; Feb. 4, 1911, to Jan. 20, 1913, general foreman G.T.P.R., Rivers, Man.

H. M. GAIN, who has been appointed Trainmaster, Districts 6 and 7, Belleville Division, Ontario Lines, G.T.R., Belleville, was born at Lindsay, Ont., Mar. 21, 1879. He entered Canadian Express Co.'s service, Apr. 13, 1894, and was, to Oct., 1898, relieving agent and messenger, Port Harvey to Portland, Me.; Oct., 1898, to Apr., 1899, in general and executive offices same company, Montreal; Apr., 1899, to June, 1904 messenger, Portland, Me., to Richmond, Que., same company; June to July, 1904, acting route agent, same company, Montreal; July to Sept., 1904, assistant route agent, Quebec; Sept., 1904, to Feb., 1905, route agent, same company, Montreal; Mar., 1905, to Mar., 1910, route agent, same company, Richmond, Que.; Apr. to July 30, 1910, route agent, same company, Montreal; July 31, 1910, to Jan. 23, 1911, in G.T.R. passenger train service at Montreal; Jan. 23, 1911, to Jan. 20, 1913, Passenger Trainmaster, Eastern Division, G.T.R., Montreal.

J. McGILLIVRAY, who has been appointed General Manager, Inverness Ry. and Coal Co., Inverness, N.S., was born at Nairn, Scotland, Nov. 13, 1867, and entered railway service in 1887, since when he has been, to June, 1902, stenographer to Assistant Superintendent, C.P.R. lines between Port Arthur, Ont., and Winnipeg; secretary to General Superintendent Western Division, C.P.R.; secretary to Manager of C.P.R. lines west of Lake Superior; chief clerk and accountant to Superintendent C.P.R. Manitoba Division; chief clerk to Superintendent of Transportation, C.P.R., Winnipeg. In June, 1902, he left C.P.R. service with E. A. James, Superintendent of Transportation, and remained with him as chief clerk on his appointment as General Superintendent, and afterwards as Manager, Canadian Northern Ry., Winnipeg; July to Aug. 30, 1904, Trainmaster, C.N.R., Kamloops, B.C.; Aug. 30, 1904, to Dec. 16, 1912, superintendent, Inverness Ry. and Coal Co.'s railway lines, Inverness, N.S.

D. CROMBIE, who has been appointed General Superintendent of Transportation, G.T.R., Montreal, was born at Hamilton, Ont., May 13, 1864, and entered railway service in 1882, since when he has been, to 1887, telegraph operator G.T.R.; 1887 to 1889, ticket clerk same road, Chatham, Ont.; 1889 to 1890, train dispatcher same road, London, Ont.; 1890 to 1892, train dispatcher, Flint and Pere Marquette Rd., Saginaw, Mich.; 1892 to 1894, car distributor same road; 1894 to Jan. 1, 1900, Car Service Agent same road; Jan. 1, to July, 1900, Superintendent Car Service Pere Marquette Rd.; July, 1900 to 1903, Superintendent of Transportation same road, Detroit, Mich.; 1903 to Feb., 1907, engaged in commercial business; Feb. to Oct., 1907, Master of Transportation, G.T.R. Middle division, London, Ont.; Oct., 1907, to Nov. 22, 1910, Assistant to General Transportation Manager, G.T.R., Montreal; Nov. 22, 1910, to Jan. 14, 1913, Assistant to the Vice President (Transportation, Maintenance and Construction), Montreal.

A. WILCOX, who has been appointed General Superintendent, Central Division, Canadian Northern Ry., Winnipeg, was born at Kincardine, Ont., Jan. 2, 1865, and entered railway service in 1881, since when he has been, to 1883, successively, operator, ticket and freight clerk, Toronto, Grey and Bruce Ry., Owen Sound, Ont.; 1883 to 1887, operator and agent at various points, and relieving dispatcher, C.P.R., Winnipeg; 1887 to 1890, train dispatcher, C.P.R., Moose Jaw, Sask.; 1903, Chief Dispatcher, C.P.R., Cranbrook, B.C.; July, 1903, to July, 1904, Chief Dispatcher, Canadian Northern Ry., Port Arthur, Ont.; July, 1904, to Jan., 1908, Superintendent, District 2, C.N.R., Winnipeg; Jan., 1908, to May, 1909, Superintendent, District 1, C.N.R., Port Arthur, Ont.; May to Nov., 1909, Superintendent, District 3, C.N.R., Dauphin, Man.; Nov., 1909, to Nov. 1, 1911, Superintendent, District 1, C.N.R., Port Arthur, Ont.; Nov. 1, to Dec. 1, 1911, Assistant General Superintendent, C.N.R., Winnipeg; Dec. 1, 1911, to Dec. 30, 1912, General Superintendent, Western Division, C.N.R., Edmonton, Alta.

J. W. Eber.
General Manager, Toronto, Hamilton and Buffalo Railway.

GRANT HALL, whose appointment as General Manager, Western Lines, C.P.R., Winnipeg, and portrait appeared in our last issue, was born at Montreal, Nov. 27, 1863, and entered railway service as an apprentice in the G.T.R. shops, Montreal. He has been, from Mar. to July, 1888, Master Mechanic, International Ry., Sherbrooke, Que.; Aug., 1888, to June, 1889, Locomotive Foreman, C.P.R., Megantic, Que.; July, 1889, to March, 1890, Locomotive Foreman, C.P.R., Brownville Jct., Me.; Apr., 1890, to Feb., 1893, Locomotive Foreman, C.P.R., Windsor St., Montreal; Mar., 1893, to Aug., 1898, General Foreman, Intercolonial Ry., Moncton, N.B.; Sept. to Dec., 1898, Locomotive Foreman, C.P.R., Windsor St., Montreal; Jan., 1899, to Jan., 1901, General Foreman, C.P.R., McAdam Jct., N.B.; Feb. to June, 1901, General Foreman, C.P.R., Winnipeg; July, 1901, to Nov., 1902, Master Mechanic, Pacific Division, C.P.R., Revelstoke, B.C.; Dec., 1902, to Feb., 1904, Assistant Superintendent of Rolling Stock, C.P.R., Montreal; Mar. to Sept., 1904, Assistant Superintendent of Motive Power, C.P.R., Montreal; Oct., 1904, to Jan., 1908, Assistant Superintendent of Motive Power, C.P.R., Winnipeg; Jan., 1908, to Oct., 1911, Superintendent of Motive Power, C.P.R., Winnipeg; Oct., 1911, to Dec. 24, 1912, Assistant General Manager, Western Lines, C.P.R., Winnipeg.

Traffic Orders by the Board of Railway Commissioners.

The dates given for orders are those on which the hearings took place, and not those on which the orders were issued:

Crushed Stone Rates.

18449. Jan. 7. Re application of Power City Stone Company, Niagara Falls, Ont., complaining of change proposed by Michigan Central Rd. in routing of crushed stone from the applicant's quarry, near St. Davids, Ont., to Toronto, under Supplement 10 to Local and Joint Commodity Tariff, C.R.C. 1743; and applying for an order disallowing or suspending the said change. It is ordered that the said supplement be disallowed; and the M.C.R. and the G.T.R. are directed to continue the joint special commodity rate of 60 cents per ton of 2,000 lbs. on crushed stone in carloads of the minimum weight of 30 net tons from St. Davids to Toronto, via Niagara Falls, Ont., the said rate to be apportioned 20 cents to the M.C.R. and 40 cents to the G.T.R., unless the companies mutually agree to apportion otherwise.

Rates on Rice, etc., from Vancouver.

18251. Nov. 29. Re application of the Imperial Rice Milling Co., Vancouver, B.C., for reductions from present freight rates on rice and broken rice (or brewers' grits, from Vancouver to points east of and including Calgary, Alta., to Winnipeg, inclusive. The application is dismissed.

Rates Between Kronau and Lajord, Sask.

18343. Dec. 13. Re complaint of J. B. McCugan, of Kronau, Sask., alleging discrimination in freight rates between the towns of Kronau and Lajord on the C.P.R. Arcola line. It is ordered that the complaint be dismissed, without prejudice to complainant's right to re-open the matter upon giving proper notice to the Board and the railway company.

Return Tickets on Great Northern Railway.

18376. Dec. 24. Re complaint of Fruitvale Conservative Association of Fruitvale, B.C., complaining that as no agent is maintained at Fruitville by the Great Northern Ry., the residents have been unable to get the benefit of a cheaper rate by purchasing return tickets. It is ordered that the G.N.R. Co. arrange within 30 days from date for the sale on its trains of return tickets to passengers from points at which no agents are maintained.

G.T.P.R. Freight Tariff.

18393. Dec. 23. Re application of Grand Trunk Pacific Ry., under section 321 of the Railway Act, for approval of its Standard Freight Mileage Tariff, C.R.C. 13, cancelling C.R.C. 11, to apply between stations in British Columbia, Prince Rupert to New Hazelton, inclusive. It is ordered that the company's said tariff be temporarily approved, pending result of enquiry by Board into rates charged generally by railways west of and including Crowsnest, Canmore, and Thornton.

Interswitching at Orillia, Ont.

18454. Dec. 31. Re application of Board of Trade of Orillia, Ont., it is ordered that the Grand Trunk Ry. and the Canadian Pacific Ry. at Orillia be so connected as to provide for the reasonable receiving, forwarding, delivering, and interswitching of traffic between their respective railways; the railway companies to file, within sixty days from date, a plan showing the proposed connection and interchange tracks; and, in the event of the companies failing to agree upon a point of connection, the same to be fixed by the Board's Chief Operating Officer.

Coal Rates from Detroit, Mich.

18464. Jan. 14. Re application on behalf of the Windsor, Walkerville and Sandwich Boards of Trade, protesting against increased rate on coal from Detroit, Mich., to Windsor and Walkerville, Ont. It is ordered that the G.T.R. and the Wabash Rd. forthwith file with the Board tariffs restoring the rate on coal, in carloads, from Detroit to Windsor and Walkerville, which was in effect prior to the publication and filing of Supplement 11 to the G.T.R. Tariff C.R.C. no. W.113 (I.C.C. no. A.1143), and Tariff C.R.C. 656 (I.C.C. no. 3138) of Wabash Rd., and cancelling the rate of 40 cents a net ton shown therein, pending hearing on a date to be fixed by Board.

Railway Finance, Meetings, Etc.

Canadian Northern Ry.—Application is being made to the Dominion Parliament to define and increase the company's bonding powers.

Dominion Atlantic Ry.—Estimated earnings for Nov.:—Passenger, $46,150.65; freight, $64,844.19; gross, $110,994.84; for December:—Passenger, $37,743.07; freight, $43,341.22; gross, $81,084.29.

Georgian Bay and Seaboard Ry.— An agreement between the company and the C.P.R., increasing the rental payable by the latter, under the original agreement of Jan. 3, 1910, has been deposited with the Secretary of State at Ottawa. There has also been deposited a duplicate of a mortgage dated Oct. 3, 1912, made between the company, the Royal Trust Co., and the C.P.R.

Grand Trunk Pacific Branch Lines Co—The G.T.R. Co. issued a prospectus in London, England, Jan. 10, offering £240,700 four per cent. first mortgage sterling bonds of the Grand Trunk Pacific Branch Lines Co., due 1939, principal and interest unconditionally guaranteed by the Saskatchewan Government, also £238,600 similar bonds due 1942, principal and interest unconditionally guaranteed by the Alberta Government. The issue price was 94. The proceeds are to be applied in building the following branch lines:—Extension of Biggar-Calgary branch, Sask., 54 miles; extension of Biggar-Battleford branch, Sask., 3.2 miles; extension of Prince Albert branch, Sask., 1.5 miles; extension of Yorkton-Canora branch, 31.3 miles; Alberta Coal branch from Bickerdike, Alta., southerly and westerly for 58 miles. A London cablegram of Jan. 16 states that 75% of the issues was taken up by the underwriters.

Grand Trunk Pacific Branch Lines.—A second supplementary instrument, dated July 31, 1912, to the original trust deed dated June 24, 1909, made between the company, the Royal Trust Co., and the Province of Saskatchewan, securing a further issue of 4% first mortgage sterling bonds, has been filed with the Secretary of State at Ottawa.

Grand Trunk Ry.—There has been deposited with the Secretary of State at Ottawa, copy of agreement of conditional sale between Blair & Co., the G.T.R. and the Bankers' Trust Co., series B., dated Nov. 1, 1912.

London and Port Stanley Ry.—At a meeting of directors Jan. 20, it was decided to ask all interests desirous of putting in bids for the lease of the line, to send in their offers by Feb. 15.

New York Central Rd.—Michigan Central Rd.—A supplemental agreement made between these railways, and other lines in the United States, dated Oct. 1, 1912, has been deposited with the Secretary of State at Ottawa. The N.Y.C. and H.R. Rd. owns the Ottawa and New York Ry., and shares with the C.P.R. the ownership of the Toronto, Hamilton and Buffalo Ry., while the Michigan Central Rd. owns the Canada Southern Ry.

St. Marys and Western Ontario Ry.—A duplicate of a mortgage entered into between the company, the Royal Trust Co., and the C.P.R., has been filed with the Secretary of State at Ottawa.

Temiscouata Ry.—Net earnings for Oct., 1912, $1,399. Aggregate net earnings for four months ended Oct. 31, $22,265.

Victoria and Sidney Ry.—After three months consideration, and several conferences with Great Northern Ry. officers, the Victoria, B.C., City Council has unanimously decided not to accept the company's offer to pay $60,000 in full settlement of the claims of the city and the provincial government for interest paid under the guarantee of the V. and S. Ry. bonds. The company offered $36,000 to the city and $24,000 to the Government and to assume all further liability on the $300,000 of bonds, which have still five years to run. The city expressed its willingness to accept $100,000 in full settlement. The line, according to the auditors, is not paying operating expenses and fixed charges, and the G.N. Ry. officials state that an immediate expenditure of $105,000 is necessary for betterments. The company informed the city council Dec. 30, that it will not increase its offer beyond the amount already named and will not consider the city's proposition. The city council is considering the desirability of taking legal proceedings.

Eastern Canadian Passenger Agents' Association.

At a meeting in Montreal, Jan. 7, the following officers, etc., were elected for the current year:—

Chairman:—G. C. Martin, G.F. & P.A., Toronto, Hamilton & Buffalo Ry.

Executive Committee:—T. Henry, T. M. Richelieu & Ontario Navigation Co.; W. Stitt, G.P.A., Canadian Pacific Ry.; H. G. Elliott, G.P.A., Grand Trunk Ry.

Rules Committee:—W. Stitt, H. G. Elliott, R. L. Fairbairn, G.P.A., Canadian Northern Ry.; J. W. Hanley, G.P.A., Central Vermont Ry; F. T. Grant, A.G.P.A., Boston & Maine Rd.; N. Mooney, G.A.P.D., New York Central Lines; W. H. Underwood, A.G.P.A., Michigan Central Rd.; J. M. Lyons, G.P.A., Intercolonial Ry.; A. J. Parr, G.F. & P.A., Timiskaming & Northern Ontario Ry.

Canadian Ticket Agents' Association.

At a meeting of the executive committee in Toronto, Jan. 21, it was decided to hold the annual meeting at Cleveland, Ohio, on Oct. 8 next. The Hollenden Hotel will be the headquarters.

W. McIlroy, City Ticket Agent, C.P.R., Hamilton; W. Jackson, City Ticket Agent, C.P.R., Clinton; and J. A. McKenzie, City Ticket Agent, G.T.R., Woodstock, Ont., were appointed a committee to visit Cleveland in August to make arrangements in connection with the entertainment of the party, etc.

C. E. Horning, City Ticket Agent, G.T.R., Toronto, was appointed the Association's delegate to attend the American Association of General Passenger and Ticket Agents' annual meeting.

Railway Route Maps Approved.

The Minister of Railways has approved the following route maps:—

EDMONTON, DUNVEGAN AND BRITish Columbia Ry., Dec. 7, 1912; revision in tps. 62-70, r. 27, west of 4th meridian, and rgs. 1 and 2, west of 5th meridian, about 50 miles.

HUDSON BAY, PEACE RIVER AND Pacific Ry., Dec. 18, 1912; from near Winnipeg, towards Port Nelson, 7½ miles, at crossing of Winnipeg river.

Sharp Flange Wheels on Locomotives and Tenders.

The Board of Railway Commissioners has issued the following circular:—"The Board's inspectors are reporting quite a number of locomotives in service with sharp flanges on wheels of both locomotives and tenders, flanges in many instances being worn down to and below the M.C.B. standard allowance gauge. Some of these locomotives are running on fast passenger trains; and while it is expected that freight cars may sometimes be found with flanges of wheels in the condition described above, it does not seem reasonable or safe to allow locomotives in service with wheel flanges worn so badly that they would not be accepted on cars at interchange points. The Board therefore urges upon you the importance of issuing to those in charge of motive power on your lines such instructions as will ensure change of wheels before flanges are so badly worn as to come under the M.C.B. standard defect gauge."

Great Northern Railway Lines in Canada.

Midland Ry. of Manitoba.—Application is being made to the Manitoba Legislature to extend the time for the building of the various lines authorized for a further period of five years.

Vancouver, Victoria and Eastern Ry. and Navigation Co.—Guthrie, McDougall and Co., who have the contract for a 50 mile extension westerly from Princeton, B.C., are reported to have sublet a portion of the work to Werdenhoff and Jacobson, St. Paul, Minn.

Press reports state that the question of building a double track line eight miles long, up the west fork of the Otter river to Otter Summit, is under consideration.

Victoria and Sidney Ry.—The British Columbia Government issued an order Jan. 2 directing the company to make considerable betterments on its line in Victoria during the next 12 months. (Jan., pg. 30.)

Canadian Pacific Railway Lets Contracts for Building Over 800 Miles on the Western Lines.

A press dispatch from Winnipeg, Jan. 18, states that the C.P.R. has let contracts for the building of 526 miles of new branch lines, and 317 miles of second track on the transcontinental line, and adds that the firms to which these contracts have been let will not consider them binding until they have been formally ratified by the President.

The transcontinental line now has at present second track from Port Arthur, Ont., to Brandon, Man, 556 miles. The contracts now let start at Kemnay, 12 miles west of Brandon, and the first two cover the distance to Regina, 217 miles. The contract for the first section from Kemnay to Virden, 40 miles—is reported let to J. D. McArthur, and the second section from Virden to Regina, 177 miles, is reported let to Foley, Welch and Stewart. A second track is already in operation from Regina to Chaplin, Sask., 96 miles. The third section for which a contract for second track construction is reported let, extends from Chaplin to Juava, 60 miles, the contract being let to Janse Bros., Boomer and Hughes. Juava is a short distance west of Swift Current, near the point at which the Swift Current-Bassano line diverges from the present transcontinental line. The fourth section of the second track work to be put under contract, is from Gleichen to Shepard, Alta., 40 miles. Gleichen is about nine miles west of Bassano, where the cut off from Swift Current joins the present transcontinental line. The contract for this section is reported let to Foley, Welch and Stewart.

There are ten contracts reported let for extensions to existing lines covering altogether 586 miles. This mileage includes the following:—

Extension of Winnipeg Beach and Gimli branch in Manitoba, from the present terminus at Gimli, to Rivertown, 40 miles, let to Foley, Welch and Stewart.

There is a line from Wood Bay on the Winnipeg, Deloraine and Lyleton branch, south easterly through Snowflake to Windygates, Man. A contract has been let to J. D. McArthur for the building of a branch of nine miles south westerly from Snowflake, parallel with the International Boundary.

The extension of the line from Weyburn, Sask., to Lethbridge, Alta., is in operation to Viceroy, Sask., and under contract for some distance further. A contract has been let to Foley, Welch and Stewart, and E. Peterson, of Omaha, Neb., for the building of a further section of 145 miles. While this line is called the Weyburn-Lethbridge line, it is to connect with the Alberta Ry. and Irrigation Co.'s line near Stirling, Alta. A branch line is under construction easterly from Stirling, and a contract for a further distance of 20 miles has been let to Geo. Webster. These mileages, with the work already under contract, will complete the line.

The branch line running north westerly from Moose Jaw, Sask., passes through Milden, Anglia and Kerrobert, and connects with the extension of the Manitoba and Northwestern Ry., and the extension of the Wetaskiwin branch of the Calgary and Edmonton Ry. at Macklin, Sask. A contract has been let to Janse Bros., Boomer and Hughes, for the building of a line from Milden to Empress, 126 miles. A second contract has been let to the firm for the extension of this line from Empress to Bassano, Alta., 118 miles. What is referred to as the Swift Current Bassano cut off is in operation from Swift Current to Cabri, Sask., 41 miles, and is under construction for some miles further. It would therefore appear that the present construction will connect up at Empress with the line now put under contract from Milden, and so complete the Swift Current-Bassano line, and a further connection with the north at Milden.

A branch line was started three years ago from Wilkie, on which one section west of Tramping Lake has been completed to Kerrobert, and a second section east of Tramping Lake has been completed to Kalfield. A contract has now been let to Geo. Webster for building a line from Anglia northerly for 30 miles, which will connect with the branch east of Tramping Lake.

A contract has been let to Janse Bros., Boomer and Hughes for a line from Kerrobert, Sask., 60 miles, westerly to a junction with the extension of the Lacombe branch of the Calgary and Edmonton Ry., which is in operation to Coronation, and is under construction for some distance further east.

A contract has also been let to Janse Bros., Boomer and Hughes, for a line northerly from Coronation, Alta., for 24 miles.

A line is being built from Suffield, Alta., southwesterly, of which about 57 miles are under construction, and on which about 26 miles of track were laid in 1912. This carries the branch to near Ritlaw, from which point a branch is to be built northerly, the contract for which has been let to Geo. Webster.

The contracts for the new lines call for the completion of the several works during this year. All the work is said to be average prairie construction, with the exception of the extension from Gimli, Man., on which there is considerable rock work. It is estimated that the contracts let to Janse Bros., Boomer and Hughes call for the shifting of 16,000 cubic yards of material; the Foley, Welch and Stewart contracts, 4,000,000 cubic yards, and the other contractors have to shift about 2,000,000 cubic yards between them.

Official Announcement of New Works.

The following official announcement was made Jan. 24, after the foregoing matter had been put in type:—

The annual appropriations for the Western Lines have been engaging the attention of Sir Thos. Shaughnessy for the past two days. The appropriations had all been passed upon by George Bury, Vice President, prior to his departure from Winnipeg for Japan on six weeks holiday, and were placed before the President by Grant Hall, General Manager Western Lines.

The policy of Mr. Bury, concurred in by the President, is that the terminals shall be increased and the main line double tracked to such an extent that they can care for the present traffic and for a reasonable prospective increase. On the building of branch lines Mr. Bury has also a distinctive policy. Early in the year he told a delegation that waited on him, asking that the C.P.R. build a branch line into a city already supplied with one railway, that he considered it a far more constructive policy to build branch lines into territory fairly well settled, but not served by a railway, than to build into places where all requirements of transportation are fairly well met. Mr. Bury considers that every farmer who is given an advantage over what he now possesses in placing his products on the market is adding an asset to the country. To reach the farmer who now has to haul his products beyond what is considered a reasonable distance, to enable him to compete with one who has been in the country a much longer period, is, Mr. Bury thinks, doing something that will encourage the man who is on the ground as well as the man who contemplates coming.

Last year there was put in operation in the West by the C.P.R. about 450 miles of new line. In addition to the new lines placed in operation the great bridge at Outlook, Sask., was finished, thus completing a practically new line from Moose Jaw to Edmonton. The Outlook bridge is over 3,000 feet long. The big Ogden shops at Calgary are enclosed and steps are being taken to put them in operation. It is estimated that the population of the Calgary district will be increased by 10,000 by the opening of these shops. The high level bridge at Edmonton is 75% completed and will connect the two sections of the city for both railway and highway traffic. At Fort William, Ont., the company has completed a 1,000,000 ton coal handling plant and bridges across the river at that place are nearing completion, thus placing the terminal there in position to care for the immense traffic now coming out of the West. On the Pacific coast the terminal station at Vancouver will be one of the best on the continent, and on the British Columbia division the double tracking is going steadily ahead, the rock ballasting through that section being one of the most permanent in track building that has ever been accomplished. Add to all these improvements the building of the yards at North Transcona, near Winnipeg, to care for 12,000 cars, some of the immensity of the work accomplished and in contemplation on Western lines can be gleaned.

The improvements on the Western lines will include: Fort William, six stall addition to locomotive house, increase of storage capacity of elevator to 4,000,000 bushels, and increase of size of freight car repair shops. Kenora, six stall addition to locomotive house. Minnedosa, Man., five stall addition to locomotive house. Arcola, Sask., four stall addition to locomotive house. Additional trackage at Regina, Moose Jaw, Saskatoon and Sutherland, Sask. Sicamous, B.C., additional trackage facilities. Vancouver, complete new terminal station and wharf, additional trackage at False Creek yards.

New branch lines: Kootenay Central, Skookumchuck, B.C., to mileage 60; Coronation to Sedgwick, Alta., 25 miles; Kootenay Central, mileage 42 to mileage 60, south of Golden, B.C.; standardization of Kaslo and Slocan Ry. from Whitewater to Kaslo, B.C., 17 miles; Snowflake, Man., west, 9 miles; Lacombe, Alta., east to Kerrobert, Sask., 66 miles; Stirling, Alta., east, 25 miles; Suffield, Alta., southwest, 25 miles; Weyburn, Sask., west, 145 miles; Assiniboia, first division point west of Weyburn, new yard; Bassano, Alta., to Empress, 118 miles; Gimli to Tiverton, Man., 26 miles.

New second track: Kemnay to Virden, Man., 40 miles; Whitewood to Broadview, Sask., 15 miles; Broadview to Grenfel, Sask., 16 miles; Indian Head to Regina, Sask., 44 miles; Chaplin to Swift Current, Sask., 57 miles; Swift Current to junction point with Swift Current northwest branch, 6 miles; Gleichen to Shepard, Alta., 40 miles. In addition to the above double tracking there will be 81 miles of double track in British Columbia from Vancouver to Ruby Creek. A portion of this, between Vancouver and New Westminster Jct., is already in operation. The balance to Ruby Creek will be completed this year. The terminal at North Transcona will be

Canadian Railway
AND
Marine World
Established 1898

Devoted to Steam and Electric Railway, Marine, Express, Telegraph, and Railway and Canal Contractors' Interests.
Official Organ of the various Canadian Transportation Associations.

ACTON BURROWS, LIMITED - Proprietors.
70 Bond Street, Toronto, Canada.

ACTON BURROWS - Managing Director and Editor-in-Chief.
AUBREY ACTON BURROWS - Secretary and Business Manager.

Associate Editor — JOHN KEIR
Associate Editor — DONALD F. KEIR
Mechanical Editor — FREDERICK H. MOODY, B.A.Sc.

United States Representative - A. FENTON WALKER
143 Liberty Street, New York City
Representative for Great Britain - J. MEREDITH McKIM
17 Cockspur Street, London, S.W.
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ADVERTISING RATES furnished on application.

ADVERTISING COPY must reach the publishers by the 10th of the month preceding the date of publication, if proof is required, or by the 15th if proof is not required.

TORONTO, CANADA, FEBRUARY, 1913.

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further developed during the year to provide for increased traffic both east and west.

Other works include additional trackage at Dunmore and Calgary, Alta., automatic block signals between Ogden and Sunalta, Alta. Passenger coach house with ice house, coal shed, etc. Alyth, Alta., six stall addition to locomotive house. Strathcona, Alta., increased trackage facilities, overhead bridge at Anthony St. Edmonton, increased trackage facilities. Wetaskiwin, Alta., increased trackage facilities and extension to express room. Lacombe, Alta., two stall addition to locomotive house and 50 ft. addition to freight shed.

British Columbia coast service, new tug boat for car barge between Vancouver and Vancouver Island, lengthen Princess Mary by 40 ft., increase stateroom capacity from 60 to 80, and instal Princess Sophia with fuel oil apparatus. British Columbia lake and river steamboats: new steam tug for Okanagan Lake, eight car barge for Okanagan Lake, eight car barge for Arrow Lake, 15 car barge for Kootenay Lake, deck barge for Kootenay Lake, steel hull steamboat for Okanagan Lake.

In addition to new work of constructing branch lines and double tracking many of the lines now in operation will be improved and laid with heavier steel, roadbed improved and additions made to smaller stations and general improvement to yards and passing tracks. Altogether it will be one of the busiest years the C.P.R. has ever had in building and improving the system. The new lines to be built total 532 miles; miles of double track, 260.

Railway Lands Patented.—Letters patent were issued during Nov., 1912, in respect of railway lands in Manitoba, Saskatchewan and Alberta, as follows:

	Acres.
Canadian Northern Ry.	800.00
Canadian Pacific Ry. roadbed and station grounds	3.06
Qu'Appelle, Long Lake and Saskatchewan Rd. and Steamboat Co.	1,782.72
Total	2,585.78

G.T.P.R. Winnipeg-Fort William Service.—It is said that the G.T. Pacific Ry. contemplates putting on a regular passenger service between Winnipeg and Fort William in the spring, but no definite announcement has been made. When this service is put on it is expected that the trains will be run into the new Union Station built by the C.P.R. at Fort William, and that the Superintendent's office will be moved from the present quarters to the Union Station.

Reduction of Steel Rails Duty.—The Minister of Customs stated in the House of Commons, Jan. 20, that orders in council had been passed during 1912 remitting $294,000 duty on 75,000 gross tons of steel rails imported into Canada, and supplied by the Algoma Steel Co., in fulfilment of contracts with the G.T. Pacific Ry. and the C.P.R. The amount remitted was one half of the duty authorized to be levied.

White Pass and Yukon Route Rates to Dawson.—In the case of the Humboldt Steamship Co. vs. White Pass and Yukon Route, consisting of Pacific and Arctic Ry. and Nav. Co., British Columbia-Yukon Ry. Co., British-Yukon Ry. Co., and British-Yukon Navigation Co., which was a petition for the establishment of through routes and joint rates from Seattle, Wash., to Dawson, and to other points in Canadian territory, the U.S. Interstate Commerce Commission held recently that it has no jurisdiction of railway and steamship lines located, owned and operated entirely in an adjacent foreign country; and that the wharf used by defendants at Skagway, Alaska, is an instrumentality of interstate commerce used by defendants.

The Dominion Government Railway to Hudson Bay.

An Ottawa dispatch Jan. 2, says H. T. Hazen, the engineer in charge of surveys, was expected in Ottawa at the end of January. His work has been the preparation of plans for terminals at Port Nelson, particularly the harbor terminals.

It was reported in Winnipeg Jan. 9, that the bridge over the Saskatchewan River at Pas, Man., for which Mackenzie, Mann and Co. are the contractors, was about half erected, and that good progress was being made with the grading by J. D. McArthur, the general contractor for the line.

An order in council has been issued withdrawing a half mile strip on either side of the line from Pas to Port Nelson from sale and reserving it for the railway's purposes. (Jan., pg. 30.)

Railway Equipment Requirements.—The Board of Railway Commissioners, at its sitting in Ottawa, Feb. 4, will consider the question of requiring railway companies, subject to its jurisdiction, to put into use truck and body bolster locking device which will hold the body of the car to the trucks, or passenger equipment, in case of derailment, head on or rear end collision. The Board will also consider the question of standardizing safety appliance equipment, similar to the requirements of the Interstate Commerce Commission.

Freight Rates on Potatoes, Etc.—In the matter of the investigation and suspension of advances in rates by carriers for the transportation of potatoes and other perishable freight in heater cars between points in Trunk Line Territory and Canada, the U.S. Interstate Commerce Commission held recently in the case of Boston Potato Receivers' Association vs. Bangor and Aroostook Rd. Co., that the proposed heater tariffs under suspension were just and reasonable and should be allowed to take effect when the reconsignment provisions therein have been modified in accordance with the views expressed by the Commission report, and subject to the limitation that no charge should be made for the use of a heater car unless ordered by the shipper, or unless the fires are lighted.

The Michigan Central Rd. has given a 99 year lease of a site in St. Thomas, Ont., conditional on a $50,000 building being erected thereon by the local Y.M.C.A.

The Quebec Legislature has passed an act creating the district of Ungava, recently granted to the Province by the Dominion, a territory to be called New Quebec.

The Department of Railways and Canals has under consideration tenders for the supply of 765,000 tons of bituminous coal for the Intercolonial Ry., and 15,500 tons for the Prince Edward Island Ry.

At the recent session of the Quebec Legislature some amendments were made in the course of procedure for the liquidation of railway companies. The law is not to become operative until 1914, and is not to be applied to any liquidation proceedings pending.

The Canadian Manufacturers' Association is considering the question of the adoption of special boxes and nails to prevent pilfering of goods in transit on railways. The executive committee of the Association has passed a resolution requesting the Board of Railway Commissioners to introduce a system of uniform penalties against railways for failure to receive, carry and deliver freight within a reasonable time, on a similar basis to that adopted under the car demurrage rules.

Transportation Appointments Throughout Canada.

The information under this head, which is almost entirely gathered from official sources, is compiled with the greatest care, so as to ensure absolute accuracy. Anyone who may notice any error in our announcements will confer a favor by advising us.

Algoma Central and Hudson Bay Ry., Algoma Eastern Ry.—H. J. HERROLD, heretofore General Agent, has been appointed General Freight and Passenger Agent. Office, Sault Ste. Marie, Ont. The position of General Agent has been abolished.

Algoma Central Steamship Line.—S. V. McLEOD has been appointed Superintendent, vice J. E. McLurg, reported to have been appointed Superintendent of Sales, Algoma Steel Corporation. Office, Sault Ste. Marie, Ont.

Canadian Northern Quebec Ry., Quebec and Lake St. John Ry.—A. S. BUCKLE, heretofore chief clerk, Claims Department has been appointed City Freight and Passenger Agent, Quebec, vice W. W. Johnston, resigned.

Canadian Northern Ry.—A. E. WARREN, heretofore General Superintendent, Central Division, Winnipeg, has been appointed Assistant to the General Manager. Office, Winnipeg.

A. WILCOX, heretofore General Superintendent, Western Division, Edmonton, Alta has been appointed General Superintendent, Central Division, vice A. E. Warren, promoted. Office, Winnipeg.

A. E. MACDONALD, heretofore Special Agent, has been appointed General Claim Agent. Office, Winnipeg.

B. T. CHAPPELL, heretofore Trainmaster, District 3, Western Division, North Battleford, Sask., has been appointed Superintendent, District 2, Western Division, vice J. G. Entwistle, transferred. Office, Saskatoon, Sask.

W. C. TURNER, heretofore Yardmaster, Saskatoon, Sask., has been appointed Trainmaster, District 2, Western Division, vice F. W. Ross, transferred. Office, Saskatoon, Sask.

W. A. BROWN, heretofore Superintendent, District 3, Western Division, Edmonton, Alta., has been appointed General Superintendent, Western Division, vice A. Wilcox, transferred. Office, Edmonton, Alta.

J. G. ENTWISTLE, heretofore Superintendent, District 2, Western Division, Saskatoon, Sask., has been appointed Superintendent, District 3, Western Division, vice W. A. Brown, promoted. Office, Edmonton, Alta.

F. W. ROSS, heretofore Trainmaster, District 2, Western Division, Saskatoon, Sask, has been appointed Trainmaster, District 3, Western Division, vice B. T. Chappell, promoted. Office, Edmonton, Alta.

Canadian Pacific Ry.—The President, Sir Thos. Shaughnessy, issued a circular, Jan. 15, as follows,—"It has been decided to create a Department of Investigation, in charge of HUGH G. CHAMBERLIN, whose title will be Chief of the Department of Investigation, with office at Windsor St. Station, Montreal. Hereafter all enquiries or investigations, excepting those involving the relations between officials and employes, and those which must necessarily be conducted through the Audit Department, will be under the control and supervision of the Chief of the Department of Investigation, who will report to the President. He will have such assistants on the different sections of the system as may be necessary to enable him to perform his work efficiently." Mr. Chamberlin was until recently Chief of Police at Vancouver, B.C.

W. A. COWAN, heretofore Assistant Engineer, Montreal, has been appointed acting Superintendent, Distric 1, Atlantic Division, vice H. C. Grout, Superintendent, promoted. Office, Brownville Jct., Me.

A. C. BRADY, heretofore Inspector of Montreal Terminals, has been appointed Assistant Superintendent Montreal Terminals, vice J. B. Smith, transferred to office of General Manager, Eastern Lines, Montreal.

M. A. FULLINGTON, heretofore Resident Engineer, Dominion Atlantic Ry., Kentville, N.S., has been appointed Assistant Division Engineer, Eastern Division, vice S. B. McConnell, promoted to Assistant Engineer. Office, Montreal.

N. E. GUTELIUS, heretofore senior transitman, London, Ont., has been appointed Resident Engineer, District 2, Eastern Division, vice C. C. Kirby, promoted to Assistant Chief Engineer's office. Office, Montreal.

T. COLLINS, Superintendent, L. L. ROSS, Bridge and Building Master, W. TANSLEY, Assistant Superintendent, and M. HUNT, Chief Dispatcher, District 1, Ontario Division, have had their jurisdiction extended over the Kingston and Pembroke Ry., which is being operated as part of that district. The offices of the first two are at Toronto, and those of the other two at Havelock.

A. Wilcox,
General Superintendent, Central Division, Canadian Northern Railway.

F. CONWAY, heretofore acting Superintendent and General Freight and Passenger Agent, Kingston and Pembroke Ry., Kingston, Ont., has been appointed City Freight and Passenger Agent, C.P.R., there.

J. ERWIN, heretofore Roadmaster, Kingston and Pembroke Ry., Kingston, Ont., has been appointed Roadmaster, Kingston Subdivision, C.P.R., at Kingston, Ont.

F. CLARK, heretofore dispatcher, Kingston and Pembroke Ry., Kingston, Ont., has been appointed dispatcher, Kingston Subdivision, C.P.R., at Kingston, Ont.

W. J. PICKRELL, heretofore District Master Mechanic, District 4, Ontario Division, Toronto, has been appointed District Master Mechanic, District 3, Ontario Division, vice J. R. Spragge, retired. Office, Toronto.

C. W. BURPEE, formerly Superintendent, District 1, Ontario Division, Toronto, who has been on sick leave for some time, has resigned.

The circular appointing GRANT HALL General Manager, Western Lines, as announced in our last issue, states that he will be in charge of maintenance and operation, with office at Winnipeg.

C. B. FOSTER, General Passenger Agent, Winnipeg, has had his territory rearranged, his jurisdiction now covering Manitoba, Saskachewan, and Alberta Divisions, and Field B.C., the territory west of Kootenay Landing and Field, and east of Revelstoke, heretofore under his jurisdiction, having been transferred to the British Columbia Division.

R. M. MITCHELL has been appointed Right of Way Agent. Office, Winnipeg.

C. PERRY, heretofore fitter at Winnipeg, has been appointed Shop Foreman at Brandon, Man., vice R. McPherson, promoted.

J. P. McANANY, heretofore District Master Mechanic, District 1, British Columbia Division, Revelstoke, has been appointed District Master Mechanic, District 2, Saskatchewan Division, vice G. Whiteley. Office, Moose Jaw.

R. McPHERSON, heretofore Shop Foreman at Brandon, Man, has been appointed Shop Foreman at Moose Jaw, Sask., vice W. J. Renix, promoted..

W. J. RENIX, heretofore Shop Foreman, Moose Jaw, Sask., has been appointed Locomotive Foreman, Sutherland, Sask., vice A. McArthur, promoted.

W. H. LEE has been appointed Locomotive Foreman, Weyburn, Sask., vice P. Walz, resigned.

R. C. HARRIS, heretofore Resident Engineer, District 1, Alberta Division, Medicine Hat, has been appointed Resident Engineer of Terminals at Calgary, Alta.

J. ROBERTSON, heretofore Resident Engineer, District 3, Alberta Division, Cranbrook, B.C., has been appointed Resident Engineer, District 2, Alberta Division, vice T. J. Brown, transferred to Cranbrook. Office, Calgary, Alta.

R. J. BETHUNE has been appointed Resident Engineer in charge of the high level bridge between Strathcona and Edmonton, and of terminal work at Edmonton. Office, Edmonton, Alta.

J. H. SOANS, heretofore transitman, has been appointed Resident Engineer, District 1, Alberta Division, vice R. C. Harris, transferred. Office, Medicine Hat.

J. ALEXANDER has been appointed Locomotive Foreman at Hardisty, Alta., vice E. B. Patterson, resigned.

M. J. SCOTT, heretofore District Master Mechanic, Nelson, B.C., has been appointed District Master Mechanic, District 1, British Columbia Division, vice J. P. McAnany, transferred. Office, Revelstoke.

A. McARTHUR, heretofore Locomotive Foreman, Sutherland, Sask., has been appointed General Foreman, Revelstoke, B.C., vice A. Mallinson, promoted.

J. HOPGOOD has been appointed Trainmaster, District 1, British Columbia Division, vice J. M. McKay, promoted. Office, Revelstoke.

A. W. CLARK has been appointed Locomotive Foreman at Kamloops, B.C.

A. E. BENNETT has been appointed Locomotive Foreman at Eholt, B.C.

T. J. BROWN, heretofore Resident Engineer, District 2, Alberta Division, Calgary, has been appointed Resident Engineer, District 3, Alberta Division, vice J. Robertson, transferred to Calgary. Office, Cranbrook, B.C.

A. MALLINSON, heretofore General Foreman, Revelstoke, B.C., has been appointed District Master Mechanic, Nelson, B.C., vice M. J. Scott, transferred.

H. W. BRODIE, General Passenger Agent, Vancouver, B.C., has had his territory extended to cover the British Columbia Division, with the exception of Field, the additional territory being the lines west of Kootenay Landing and Field.

Central Vermont Ry.—E. J. CHAMBERLIN, President, G.T.R., G.T. Pacific Ry., and subsidiary companies, and Chairman of the Board, C.V.R., has also been elected President, C.V.R., vice E. H. Fitzhugh, resigned.

Dominion Atlantic Ry. G. G. HARE, heretofore Engineer of Construction, has been appointed Engineer, vice M. A. Fullington, retransferred to C.P.R. service. The duties of the former position will be combined with those of the latter. Office, Kentville, N.S.

Fort Garry Union Station, Winnipeg.—P. J. FLYNN, heretofore Trainmaster, Buffalo Division, Lehigh Valley Rd., Buffalo, N.Y., has been appointed Manager of Terminals, Winnipeg Joint Terminals, Canadian Northern, G.T. Pacific and National Transcontinental Rys., vice J. A. Glassford, resigned.

Grand Trunk Pacific Ry. G. W. ROBB, Master Mechanic, has had his office removed from Rivers to Transcona, Man.

M. B. DUBE, heretofore General Foreman, Rivers, Man., has been appointed General Foreman, Transcona Shops. Office, Transcona, Man. ,

H. HULATT has been appointed Commercial and Traffic Superintendent with jurisdiction over operation of railway and commercial telegraphs and departmental accounts. Office, Winnipeg.

W. J. ROONEY has been appointed Superintendent of Plant, with jurisdiction over all matters pertaining to construction and maintenance of telegraph and telephone plant. Office, Winnipeg.

J. H. MITCHELL has been appointed Locomotive Foreman, Rivers, Man.

C. B. SMITH, heretofore Road Foreman of Locomotives, Wainwright, Alta., has been appointed a locomotive driver at Edmonton, Alta.

H. L. GURWELL has been appointed agent at Hinton, Alta.

S. J. COVEY, heretofore Roadmaster, has been appointed Trainmaster at Wainwright, Alta.

W. L. PINKSTONE, heretofore section foreman, has been appointed Roadmaster at Wainwright, Alta., vice S. J. Covey, promoted.

Grand Trunk Ry.—The Transportation Department has been reorganized and a number of new positions created. The office of General Transportation Manager, which was abolished on the resignation of W. G. Brownlee, has been partially revived, by the creation of the position of General Superintendent of Transportation. The system has been divided into three grand divisions, each in charge of a general superintendent. The various districts have also been grouped into divisions, instead of subdivisions as heretofore. A superintendent of freight service and a superintendent of passenger service have also been appointed.

D. CROMBIE, heretofore Assistant to the Vice President, Montreal, has been appointed General Superintendent of Transportation. Office, Montreal.

W. H. FARRELL, formerly Superintendent of Terminals, Toronto, and latterly on special service, has been appointed Superintendent of Freight Service. Office, Montreal.

F. PRICE, heretofore Superintendent of Car Service, Montreal, has been appointed Superintendent of Passenger Service, and his former position has been abolished. Office, Montreal.

C. G. BOWKER, heretofore Joint Superintendent, G.T.R. and Wabash Rd., St. Thomas, Ont., has been appointed General Superintendent, G.T.R. Eastern Lines, including Montreal Division (Districts 1, 2, 3 and 4), Montreal Terminals, Belleville Division (Districts 5, 6, 7, 8, 9 and 10), and Ottawa Division (Districts 30, 31 and 32). Office, Montreal.

J. J. CONNOLLY, heretofore Assistant Superintendent, Montreal, has been appointed Superintendent, Montreal Division, Eastern Lines, comprising Districts 1, 2, 3 and 4. Office, Montreal.

R. W. SCOTT, heretofore Freight Agent, Montreal, has been appointed Superintendent of Montreal Terminals. Office, Montreal.

F. L. C. BOND, heretofore Resident Engineer, Montreal, has been appointed Division Engineer of Eastern Lines. Office, Montreal.

J. H. JOHNSTON, heretofore Master of Bridges and Buildings, Montreal, has been appointed Superintendent of Bridges and Buildings, Eastern Lines. Office, Montreal.

W. A. Brown,
General Superintendent, Western Division, Canadian Northern Railway.

G. BECKINGHAM, heretofore General Roadmaster, Montreal, has been appointed Superintendent of Track, Eastern Lines. Office, Montreal.

L. HAROLD, formerly Assistant Trainmaster, Hamilton, Ont., has been appointed Superintendent of Transportation, Eastern Lines. Office, Montreal.

R. P. SMALLHORN, heretofore Trainmaster, Richmond, Que., has been appointed Freight Agent at Montreal.

T. CUSHING, heretofore Chief Dispatcher, Belleville, Ont., has been appointed Trainmaster, District 3, Montreal Division, vice R. P. Smallhorn, assigned to other duties. Office, Richmond, Que.

H. F. COYLE, heretofore Assistant Superintendent, Belleville, Ont., has been appointed Superintendent, Belleville Division, Eastern Lines, comprising Districts 5, 6, 7, 8, 9 and 10. Office, Belleville, Ont.

H. M. GAIN, heretofore Passenger Trainmaster, Eastern Division, Montreal, has been appointed Trainmaster, Districts 6 and 7, Belleville Division, Eastern Lines. Office, Belleville, Ont.

C. S. OGILVIE has been appointed Assistant Engineer, Belleville Division, Eastern Lines. Office, Belleville, Ont.

H. E. WHITTENBERGER, heretofore Superintendent, Middle Division, Toronto, has been appointed General Superintendent, Ontario Lines, including Toronto Terminals, Barrie Division (Districts 11, 12 and 14), Hamilton Division (Districts 13, 16, 17 and 19), London Division (Districts 17, 18, 20, 21 and 24), St. Thomas Division (Districts 18 and 19), Stratford Division (Districts 15, 22 and 23). Office, Toronto.

G. A. STOKES, heretofore acting Superintendent of Terminals, Toronto, has been confirmed in that position.

G. A. MITCHELL, heretofore Master of Bridges and Buildings, Toronto, has been appointed Superintendent of Bridges and Buildings, Toronto.

H. FERGUSON, heretofore General Roadmaster, Toronto, has been appointed Superintendent of Track, Toronto.

E. G. HEWSON, heretofore Resident Engineer, Toronto, has been appointed Division Engineer, Toronto.

JOHN GRAY, heretofore agent at Hamilton, Ont., has been appointed General Agent, Toronto, vice J. H. Gordon, promoted.

J. H. GORDON, heretofore General Agent, Toronto, has been appointed Superintendent, Hamilton Division, Ontario Lines, comprising Districts 13, 15, 17 and 19. Office, Hamilton.

WM. HALL, heretofore Assistant Trainmaster, Hamilton, Ont., has been appointed Trainmaster, Districts 13, 16, 17 (Hamilton to Niagara Falls), 19 Port Dalhousie to Port Robinson, and Welland Jct. to Port Colborne), Hamilton Division, Ontario Lines. Office, Hamilton.

H. McLENNAN, heretofore night chief dispatcher, London, Ont., has been appointed Chief Dispatcher, Hamilton, Ont.

J. WILSON has been appointed General Foreman of Bridges, Hamilton, Ont.

J. ADAMS, heretofore chief clerk, Local Freight Department, Toronto, has been appointed agent at Hamilton, Ont., vice J. Gray, promoted.

W. R. LAVIDSON, heretofore Trainmaster, London, Ont., has been appointed Superintendent, London Division, Ontario Lines, comprising Districts 17, 18, 20, 21 and 24. Office, London.

W. J. DURKIN, heretofore conductor, has been appointed Trainmaster, Districts 17 (Sarnia Tunnel to Hamilton, including Petrolia Branch), 18 (Komoka to Glencoe), 19 (Glencoe to Kingscourt Jct.),, and 24, London Division, Ontario Lines. Office, London.

F. A. RUTHERFORD, heretofore dispatcher, has been appointed Chief Dispatcher, London, Ont.

R. H. FISH, heretofore Road Foreman of Locomotives, London, Ont., has been appointed Trainmaster, Districts 20 and 21, London Division, Ontario Lines. Office, Brantford.

C. FORRESTER, heretofore Trainmaster, Stratford, Ont., has been appointed Superintendent, Stratford Division, Ontario Lines, comprising Districts 15, 22 and 23. Office, Stratford.

C. J. McKEOUGH, heretofore conductor, has been appointed Trainmaster, District 15, Stratford Division, Ontario Lines. Office, Stratford.

WALTER WHITE has been appointed Trainmaster, Districts 22 and 23, Stratford Division, Ontario Lines. Office, Stratford.

W. CULLIGAN, heretofore dispatcher, has been appointed Chief Dispatcher, Stratford, Ont.

P. J. LYNCH, heretofore Superintendent, Northern Division, Allandale, Ont., has been appointed Superintendent, Barrie Division, Ontario Lines, comprising Districts 11, 12 and 14. Office, Allandale.

J. C. CROMBIE, heretofore Master of Transportation, London, Ont., has been appointed Superintendent at St. Thomas, Ont.

U. E. GILLEN, heretofore Superintendent Eastern Division, Montreal, has been appointed General Superintendent, Western Lines, including Districts 25, 26, 27, 28, 29 and Pontiac, Oxford and Northern Ry. Office, Chicago, Ill.

J. CALDWELL has been appointed Superintendent, Detroit Division, including Durand Terminals, Districts 27, 23, 29, and Pontiac, Oxford and Northern Ry., vice C. S. Cunningham, Superintendent, Western Division, resigned. Office, Detroit, Mich.

J. EHRKE, heretofore Assistant Superintendent, with territory covering Districts 25 (main line) and 26, Battle Creek, Mich., has been appointed Superintendent, Chicago Division, including Districts 25 and 26. Office, Battle Creek, Mich.

A. B. SMITH, heretofore Manager of Telegraphs, G.T. Pacific Ry., Winnipeg, has also been appointed Manager of Telegraphs, G.T.R System. Office, Montreal.

B. H. BROWN, Montreal, has been appointed one of the two auditors in Canada for the G.T.R. System. The other auditor is [illegible], Montreal.

With reference to the appointment of A. S. GOING as Engineer of Construction, as announced in our last issue, we are advised that matters of location will remain under his supervision, so no appointment to the position of Locating Engineer, formerly held by him, will be made.

W. H. SPICER, heretofore Commercial Agent, Detroit, Mich., has been appointed Division Freight Agent there, vice C. Clarke, whose appointment as Assistant Commissioner of Industries was announced in our last issue.

JAS. McPEAK has been appointed Commercial Agent at Detroit, Mich., vice W. H. Spicer, promoted.

G. W. NORMAN, heretofore Travelling Passenger Agent, Kansas City, Mo., has been appointed Travelling Passenger Agent, Chicago, Ill., reporting to Assistant General Passenger Agent, Chicago, vice M. J. Corcoran, resigned.

W. M. LEWIS has been appointed Travelling Passenger Agent, Kansas City, Mo., reporting to Assistant General Passenger Agent, Chicago, Ill., vice G. W. Norman, transferred.

The following agents have been appointed:—Dewittville, Que., W. J. Martin; Thousand Island Ry. Jct., Ont., F. J. Laughton; Novar, Ont., J. Mitchell; Wyebridge, Ont., W. J. Breathaur (relieving); Alliston, Ont., F. O. Moore; Burlington Jct., Ont., I. G. Heldman; Beamsville, Ont., D. O'Neill; Komoka, Ont., H. W. Sussex; Wyoming, Ont., T. M. Davis; Nelles Corners, Ont., O. W. Heath; Ekfrid, Ont., A. E. Beales; Elora, [illegible], Ont., S. [illegible]; Wingham, Ont., W. F. Burgman; St. Polycarpe Jct., Ont., A. Joli; Wilno, Ont., E. C. Childerhose (temporarily); Enterprise, Ont., outside, S. B. Wagar; Lachute, Que., [illegible] W. H. [illegible] Garratsee.

Intercolonial Ry.—H. JARDINE, heretofore Division Engineer, Truro, N.S., has been appointed Resident Engineer, with territory between Halifax, N.S., and St. John, N.B. Office, Truro, N.S.

J. C. FULMORE, heretofore Roadmaster at Pictou, N.S., has been appointed Roadmaster at Truro, N.S., vice C. W. Archibald, promoted.

C. W. ARCHIBALD, heretofore Roadmaster, Truro, N.S., has been appointed Resident engineer, with territory between Truro and Sydney, N.S.

H. SPINNEY has been appointed Roadmaster, Pictou, N.S., vice J. C. Fulmore, transferred.

U. E. Gillen,
General Superintendent, Western Lines, Grand Trunk Railway.

J. M. BOAK and V. H. WILLIAMS have been appointed Travelling Freight Agents, Western United States, reporting to Western U.S. Freight Agent, Chicago, Ill.

H. E. Whittenberger,
General Superintendent, Ontario Lines, Grand Trunk Railway.

Inverness Ry. and Coal Co.—J. McGILLIVRAY, heretofore Superintendent of the company's railway lines, has been appointed General Manager, vice W. D. Barclay, deceased. Office, Inverness, N.S.

Michigan Central Rd.—H. SHEARER, heretofore Assistant to General Manager, has been appointed Assistant General Superintendent, vice M. B. Snow, resigned. Office, Detroit, Mich.

F. W. COWLEY, heretofore acting Superintendent, Canada Division, St. Thomas, Ont., has resumed his former position as Trainmaster, St. Thomas, Ont., vice J. S. Graney, assigned to other duties.

W. E. HACKETT has been appointed Local Treasurer, M.C.R., Detroit River Tunnel Co., Detroit River Terminal Rd., and Toronto, Hamilton and Buffalo Ry., vice J. E. Griffiths, deceased. Office, Detroit, Mich.

D. J. HACKETT has been appointed Superintendent, Canada Division, vice F. W. Cowley, acting Superintendent, who resumes his former position. Office, St. Thomas, Ont.

W. E. HACKETT has been appointed Local Treasurer, T.H. and B.R., as well as of the Michigan Central Rd., vice J. E. Griffiths, deceased. Office, Detroit, Mich.

J. S. GRANEY, heretofore acting Trainmaster, St. Thomas, Ont., has resumed his former position there, as dispatcher.

Pere Marquette Rd.—J. J. WATERS has been appointed Superintendent of Motive Power, vice W. L. Kellogg, resigned. Office, Grand Rapids, Mich.

Quebec, Montreal and Southern Ry., Napierville Jct. Ry.—N. J. FERGUSON, heretofore Travelling Freight and Passenger Agent, Montreal, has been appointed General Freight and Passenger Agent, vice D. I. Roberts, resigned. Office, Montreal. We are officially advised that the position of General Manager also held by Mr. Roberts, will not be filled for the present, the duties heretofore performed by Mr. Roberts having been divided between N. J. Ferguson, General Freight and Passenger Agent, and J. E. Roberts, Superintendent.

Reid Newfoundland Co.—F. RIOUX, heretofore Superintendent, St. John's, Nfld., has been appointed Assistant to President. Office, St. John's, Nfld.

W. E. LADLEY, heretofore Shop Superintendent, Chicago and Alton Rd., Bloomington, Ill., has been appointed Superintendent of Motive Power, R.N. Co., vice A. C. Gray. Office St. John's, Nfld.

A. GRAHAM has been appointed Assistant to General Superintendent. Office, St. John's, Nfld.

G. COBB, heretofore Chief Dispatcher, St. John's, Nfld., has been appointed Superintendent, vice F. Rioux, promoted. Office, St. John's, Nfld.

W. CHARD has been appointed Claims Agent, dealing with baggage and freight claims, under supervision of General Passenger Agent. Office, St. John's, Nfld.

Dining car crews, sleeping car porters, stewards and cooks of steamers, and pursers, have been placed under the supervision of the General Passenger Agent, instead of the Superintendent, as heretofore.

Toronto, Hamilton and Buffalo Ry.—J. W. EBER, heretofore General Superintendent, has been appointed General Manager, vice H. H. Adams. Office, Hamilton, Ont.

C. H. BORE has been appointed chief clerk to the Secretary-Treasurer, Montreal Tramways Co., vice G. A. McNamee, resigned.

The Manitoba Public Utilities Commission, which has had under consideration for some time the matter of the utilization of the Winnipeg Electric Ry. poles by the municipality, has ordered that the company's poles be owned and used jointly with the city.

Railway Rolling Stock Orders in 1912.

Passenger Cars

Purchaser.	No.	Kind	Builder.
Algoma Central	4	Coaches	Preston Car
Algoma Eastern	ej2	First class	Canada Car & Fdy.
	ej1	Second class	Preston Car
	ej2	Pass & baggage	Can. Car & Fdy.
Canadian Northern	ef30	First class	
	eg2	Cafe parlor	Barney & Smith
	eg15	Baggage	
	ej9	Baggage and mail	
	eg2	Dining	
	eg16	Sleeping	
	1	Gas electricity	Gen. Elec.-Wason
	25	Second class	Crossen Car
Canadian Northern Ont.	ef12	First class	
	ef3	Second class	
	eg2	Cafe-parlor	
	ej4	Baggage	
	ej2	Dining	
Canadian Nor. Quebec	ef3	First class	
	ef10	Second class	
	ej6	Excursion	
	ej2	Cafe-parlor	
	ef2	Baggage	
	ej2	Baggage and mail	
	ef2	Second class	
	ag1	Motor	
Canadian Pacific	eg30	Sleeping	Barney & Smith
	e30	Sleeping	Pullman
	e13	Dining	"
	g15	Tourist	Canadian Car & Foundry
	g20	Baggage and express	" "
	g10	First class	" "
	12	Sleeping	Company Shops
	3	Compt. sleeping	" "
	34	Sleeping	" "
	12	Dining	" "
	8	Buffet parlor	" "
	42	Tourist	" "
	2	Colonist	" "
	107	First class	" "
	12	Second class	" "
	56	Baggage and express	" "
	13	Mail and express	" "
	1	Baggage and smok.	" "
	2	Horse exp.	" "
	1	Fruit exp.	" "
	50	Baggage	" "
Central Vermont	b2	Parlor	American Car & Foundry
	b1	Dining	" "
Grand Trunk	b15	Sleeping	Pullman
	g10	Second class	Canadian Car & Foundry
	g5	Colonist	" " "
	b5	Tourist	" " "
	b6	Dining	Pullman
	e10	Colonist	"
	b6	Cafe-parlor	"
	b10	Coaches	"
Intercolonial	bfg2	Sleeping	Pullman
	bfg1	Dining	"
	bfg1	Dining	Canadian Car & Fdy.
	bfg2	Sleeping	" " "
	ef6	Coaches	Preston C. & C.
	ef3	Baggage	" "
	ef2	Coach	Canadian Car & Fdy.

a Indicates all-steel cars
b Indicates steel underframe cars.
c Indicates composite body cars.
d Indicates composite underframe cars
e Indicates all-wood cars
f Indicates gas lighting.
g Indicates electric lighting
h Indicates acetylene lighting.
j Indicates oil lighting.

Freight Cars

Purchaser.	No.	Kind.	Capacity	Builder
Algoma Cent. & Hud. Bay	70	Gen. serv.		Canadian Car & Fdy
Algoma Eastern	bh70	Hart-Otis	100,000	" " "
	ah24	Flat	80,000	" " "
	bfh25	Box	80,000	" " "
Algoma Steel Corp.	aj 5	Gen. service	100,000	
Allis Chalmers	b1	Logging		Canadian Car & Fdy
Canadian Northern	g1,500	Box	60,000	Nova Scotia
	b650	Box	60,000	Canadian Car & Fdy.
	g500	Box	60,000	" "
	g50	Box	60,000	Rathbun
	g200	Box	60,000	Crossen Car
	700	Box	60,000	
	g100	Auto	60,000	Crossen Car
	gj500	Flat	60,000	" "
	g300	Flat	60,000	Rathbun
	aj250	Flat	80,000	
	gj324	Hart	80,000	
	gj50	Caboose		
	gj10	Tank	8,000 g	
	g100	Refrig.	60,000	Mt. Vernon C. & Mfg.
	g150	Stock	60,000	Crossen Car
Canadian Nor. Ontario	gj200	Box	60,000	
	gj50	Coal	60,000	
	gj76	Hart	80,000	
Canadian North. Quebec	gj300	Box	60,000	
	gj50	Flat	60,000	
	gj50	Coal	60,000	
	gj20	Caboose	60,000	
Canadian Pacific	1,000	Box		American Car & Fdy.
	2,000	Box		Western Steel
	2,000	Box		Standard Steel
	800	Flat		Canadian Car & Fdy.
	200	Stone		" " "
	a616	Ballast	100,000	" " "
	a400	Flat	80,000	" " "
	a411	Gen. serv.	100,000	" " "
	be3,000	Box	80,000	" " "
	be5,000	Box	80,000	" " "
	100	Auto	80,000	" " "
	bf5,000	Box	80,000	Barney & Smith
	865	Stock	60,000	Company Shops
	522	Refrig.	60,000	
	170	Flat	60,000	
	38	Horse	60,000	
	3,000	Box	80,000	
	1,141	Box	80,000	
	20	Dump	100,000	Canadian Car & Fdy.
	1,500	Box	80,000	National Steel
	500	Box	80,000	Nova Scotia
	200	Stone	80,000	
	20	Tank		American Car & Fdy.
Cavicchi & Pagano	g16	Dump	60,000	Canadian Car & Fdy.
Dominion Bridge Co.	g1	Unloader	60,000	" " "
Dominion Coal Co.	a25	Coal	100,000	" " "
	g50	Coal	30,000	" " "
Dominion Eq. Co.	g3	Unloader	60,000	" " "
Dom. Iron & Steel Co.	g10	Limestone		" " "
Edmonton Radial	a1	Self-cl.		Canadian Car & Fdy.
Grand Trunk	gh250	Refrig.	60,000	American Car & Fdy.
	gh250	Refrig.	60,000	Canadian Car & Fdy.
	bh250	Auto	60,000	American Car & Fdy.
	bh250	Auto	60,000	Western Steel
	bfh2,000	Box	60,000	Pressed Steel
	bh300	Flat	60,000	American Car & Fdy.
	ah50	Tank	60,000	" " "
Hopkins & Co., F. H.	g11	Unloader	60,000	Canadian Car & Fdy.
	g1		60,000	" " "
Intercolonial	bfh500	Box	60,000	" " "
	gh100	Hart conv.	80,000	" " "
	ah100	Flat	80,000	" " "
	ah50	Dump	100,000	" " "
	gh20	Refrig.	60,000	" " "
	ah1	Tank	8,000 g.	" " "
	ah 100	Flat	80,000	" " "
	ah50	Hart-Otis	100,000	" " "
	bh20	Stock	60,000	" " "
	gh10	Refrig.	60,000	" " "
	bfh250	Box	60,000	" " "
	gh120	Box	60,000	Company shops
	gh10	Caboose		" "
	bf623	Box	60,000	Nova Scotia
	g150	Box		" "
Malcolm, Thos.	g20	Logging	60,000	Canadian Car & Fdy.
Mussens, Limited	bj200	Box	80,000	" " "
Prince Edward Island	gh15	Hart-Otis	60,000	Company shops
	h1	Tank	3,000g	
Quebec Central	gh100	Rack	60,000	" "
Timiskaming & N. Ontar.	b4	Box		Canadian Car & Fdy.
Toronto, Hamilton & Buff.	bh4	Way		American Car & Fdy.
	1,250	Freight		National Steel
	250	Rodg. bal.		Canadian Car & Fdy.
	ah10	Flat	80,000	" " "

a Indicates all-steel cars.
b Indicates steel underframe cars.
c Indicates all-composite cars.
d Indicates composite underframe cars
e Indicates composite body cars.
f Indicates steel frame cars.
g Indicates all-wood cars.
h Indicates spring draft gear.

Locomotives

Purchaser.	No.	Cylinders.	Total Weight, Engine Only	Type	Builder.
Algoma Central	†5	22x28	197,300	2-8-0	Canadian
Algoma Eastern	†1	22½x28	195,000	2-8-0	Montreal
	†1		142,000	2-6-0	"
British Columbia Electric	†5			Electric	West-Baldwin
Canadian Northern	†4	23x28	213,000	4-6-2	Montreal
	†15	22x26	172,000	4-6-0	"
	†20	24x32	220,000	2-8-0	Canada Foundry
	†20	20x24	154,000	4-6-0	Montreal
	†25	23x26	188,600	2-8-0	Canadian
	20	19x26	121,000	0-6-0	"
Canadian Northern Ont.	†10	22x26	173,000	4-6-0	Montreal
Canadian Nor. Quebec	†6	22x26	173,000	4-6-0	"
	2	19x26	123,000	0-6-0	Canadian Loco. Co.
Canadian Pacific	†21	22½x28	222,000	4-6-2	Company shops
	†30	22½x28	222,000	4-6-2	Montreal
	†100	21x28	198,000	4-6-0	"
	†25	21x28	198,000	4-6-0	American
	†25	21x28	198,000	4-6-0	Canadian Loco. Co.
	†60	23½x32	225,000	2-8-0	Montreal
	†10	23½x32	225,000	2-8-0	Canada Foundry
	†20	23½x32	258,000	2-8-2	Company shops
	†75	23½x32	258,000	2-8-2	Montreal
	27	18x26	137,000	0-6-0	Company shops
	†45	18x26	137,000	0-6-0	" "
	†8	19x24	139,000	4-6-0	Montreal
	†25	19x24	139,000	4-6-0	Company shops
	†10	19x24	146,000	4-6-0	"
	†2	22½x28	222,000	4-6-2	"
	†10	21x28	188,000	0-8-0	"
Canadian West Lumb. Co.	1		124,000	Geared	Heisler
Central Vermont	4	22x28	216,500	4-6-2	Baldwin
	3	20x26	145,200	Shay	Lima
Grand Trunk	†19	23x28	225,000	4-6-2	Baldwin
	†41	23x28	225,000	4-6-2	Montreal
	15	20x26	139,500	0-6-0	Canadian Loco. Wks
	†25	27x30	276,000	2-8-2	American
Grand Trunk Pacific	15	23x30	208,600	2-8-0	Canadian
	25	33x30	209,000	2-8-0	Montreal
Grant, Smith & Co.	3	17x24	94,000	0-6-0	Davenport
Harbor Com'rs of Quebec	3	19x26	120,000	0-6-0	Montreal
Intercolonial	†5	22½x28	200,000	2-8-0	"
	8	20x26	137,700	0-6-0	Canadian
	†10	22x28	200,000	2-8-0	"
	†5	24x32	236,000	2-8-0	Canada Found. Co.
Niag. St. Cath. & Toronto	1			Electric	West-Baldwin
O'Brien, McD. & O'G.	7	18x24	109,000	4-6-0	Montreal
Quebec Central	2	20x26	50,000	4-6-0	Canadian
	†4	21x26	55,000	4-6-0	"
Sydney & Louisburg	1	21x26	177,000	2-8-0	Montreal
	1	19x26	129,000	2-6-0	"
Toronto, Hamil. & Buff.	†2	23x28	205,000	2-8-0	Montreal Loco
	†2	21x28	166,000	0-6-0	" "

† Indicates superheater.

—Railway Age Gazette

National Transcontinental Railway Construction.

The main line of the N.T.R., which has been operated for freight purposes by the G.T. Pacific Ry. for some time, under an agreement with the Commission, from Winnipeg to Lake Superior Jct., was connected up with Cochrane, Ont., Dec. 28. A train load of wheat was started from Winnipeg Dec. 27, and was run over the line to Cochrane, Ont., there transferred to the Timiskaming and Northern Ontario Ry., over which the G.T.R. has running powers, transferred to the G.T.R. at North Bay, and thence run over the G.T.R. to Port Colborne, Ont., where the wheat was milled. The flour was then carried over the G.T.R. and Intercolonial Ry. to St. John, N.B., where it was shipped to South Africa.

The shops at Transcona, Man., were taken over by the G.T.P. Ry. from the N.T.R. Commission Jan. 20. (Jan., pg. 29.)

Crand Trunk Pacific Railway Construction.

In the House of Commons Jan. 17, the Minister of Finance stated that it had been decided to devote part of the surplus revenues of the country to the purchase of G.T.P.R. bonds. The country had had to provide $4,944,000, the difference between the face value of bonds already sold, and the price realized for them on the market, under the "implementing" clause of the guarantee agreement. There remained to be sold bonds to the value of £6,800,000, and it was proposed that the Government have power to take these bonds, and raise the money necessary on the security of the Government. At present prices it would cost about $8,000,000 to carry out the provision of the "implementing" guarantee. It was possible to save something of this by borrowing directly on the credit of the country, but it was impossible to forecast what the saving would be. A bill to carry this decision into effect was subsequently passed by both houses.

The G.T. Pacific Ry. reports that at Dec. 31 there were 440 miles of main line and 205.8 miles of branch lines under construction, on which considerable work had been done. The general contract on the main line is held by Foley, Welch and Stewart; and the branch lines, with the contractors are: Harte-Brandon branch, 25 miles, Rigby Hyland and Plummer; Regina International Boundary, 19 miles, J. D. McArthur, Winnipeg; Talmage to Weyburn, 14.8 miles, J. Bradley; Regina to Moose Jaw, 3 miles, Rigby, Hyland and Plummer; Moose Jaw northwesterly, 50 miles, Rigby Hyland and Plummer; Young to Prince Albert, 44 miles, J. D. McArthur; Battleford to Wainwright, 46 miles, Lamoreaux and Peterson; Tofield to Calgary, 4 miles, J. D. McArthur, sublet to Sieurs and Carey. In each case the mileage under construction is the uncompleted portion of the lines.

In a general report as to construction, B. B. Kelliher, Chief Engineer, states that during 1912 563 miles of main line and 688 miles of branch lines were under construction. Track was laid during the year on 128 miles of main line and 459 miles of branch lines. Track laying was completed on the main line to mileage 1,124 west of Winnipeg, and trains are being operated to Tete Jaune Cache, 1,096 miles from Winnipeg. Grading is so far advanced that it will be possible to lay track to mileage 1,190 early in the spring. Easterly from Prince Rupert the line is in operation to New Hazleton, track being laid to mileage 189. Active grading work is going on from mileage 189 to mileage 341 from Prince Rupert, or mileage 1403 from Winnipeg.

Of the branch lines the report sets out as follows:—Harte-Brandon—There are 10.8 miles out of the 25 ready for track laying; Regina boundary branch—track has been laid for 106 miles, and there are 19 miles yet to be completed; Talmage to Weyburn—under contract, with 39% of the grading completed; Regina-Moose Jaw—nearly completed, and terminal layout in Moose Jaw in progress; Moose Jaw northwesterly—grading practically completed, but no track laid; Oban-Battleford branch—48.5 miles completed; Cutknife branch—grading completed and four miles of track laid; Young to Prince Albert—track laid to Wicklaw, 67 miles, and grading completed into Prince Albert; but line will not be completed until bridge is built across Saskatchewan river; Biggar towards Calgary—grading completed to Saskatchewan-Alberta boundary, and a few miles of grading has yet to be completed, track has been laid for 37 miles out of Biggar; Tofield-Calgary branch—grading practically completed on the 202 miles, track laid to mileage 165.3, and trains are operated to mileage 65, some steel bridges are to be built.

The Board of Railway Commissioners has authorized the opening for traffic of the Regina-Moose Jaw branch from mileage 0 to 34.[illegible].

The Saskatchewan Minister of Railways informed the Legislature recently that under an arrangement with the Government the company is building an extension of the Moose Jaw-Riverside branch into the Duck Lake country. It is expected to have it completed to the Saskatchewan river during this year, and arrangements are being made for carrying on construction west of the river so that track laying can be carried on throughout the whole length of the branch on completion of the bridge over the river.

The Saskatchewan Legislature has passed an act guaranteeing the bonds of the G.T.P. Branch Lines Co., and the G.T.P. Saskatchewan Ry., for building terminals as follows:—In Saskatoon, $1,200,000; in Regina, $850,000; in Moose Jaw, $850,000; in Prince Albert, $350,000; in Battleford, $100,000. It has also passed an act extending the time within which the branch lines being built under contract with the Government may be completed. The Minister of Railways stated in the Legislature Jan. 9, that the 105 miles of lines which had to be built under the 1908 contract have been completed, and are in operation, and of the 475 miles to be built under the 1909 contract about 300 miles had been completed.

Telegraph, Telephone and Cable Matters.

The Canadian Northern Telegraph Co. has opened an office at Leask, Sask.

It is reported that the Dominion Government has opened a wireless telegraph station at Alert Bay, on the north of Vancouver Island, thus making 10 stations along the coast, under Government control.

The Great North Western Telegraph Co. has opened an office at Donnacona, Que., and closed its offices at Burgessville, Foxboro, Grimsby Beach, Muskoka Wharf, Ont., Chaudiere Basin, Little Metis Lighthouse and Matane Lighthouse, Que.

P. T. Hawkins has been appointed Manager, Great North Western Telegraph Co., at Guelph, Ont., vice R. G. Davidson, resigned; J. L. Murphy, heretofore Manager at Ingersoll, Ont., has been appointed Manager at Peterboro, Ont., and I. Labrie has been appointed Manager at Ingersoll, Ont.

A telegraph machine has been invented in Spain, which is claimed to be a distinct advance on the Hughes machine in use at present, in that it will transmit 1,820 words a minute, a speed three times greater than that obtainable on the Hughes machine.

A press report states that communication took place recently, between two wireless telegraph stations, situated at Nauen, Germany, and New York, and it is said that this is the first time that direct wireless communication has been established between Germany and the U.S.

A. B. Smith, Manager of Telegraphs, G.T. Pacific Ry., Winnipeg, has had his jurisdiction extended over the whole G.T.R. System, with office at Montreal. We are officially advised that no change will be made in the position of Superintendent of Telegraph, Montreal, held by W. W. Ashald.

During the storms in the early part of January, considerable damage was done to telegraph lines east of Toronto, the Great North Western Telegraph Co. losing nearly 700 poles. Communication was interrupted in the Brighton and Belleville district, for some time, the repairs being quickly carried out under the supervision of W. J. Duckworth, Superintendent of Construction.

The Saskatchewan Legislature has fixed the taxes, under the amendments to the Corporation Tax Act, for every telegraph company owning, leasing and operating telegraph lines in the Province, and carrying on a general commercial business, as follows,—for every branch office in any incorporated city, $125; in any incorporated town, $50, and in any incorporated village, $20.

The Montreal Telegraph Co.'s report for 1912, being the 66th annual report, shows assets of $2,307,582. The property is maintained and operated by the Great North Western Telegraph Co., under lease, and dividends guaranteed by the Western Union Telegraph Co. The lease is for 97 years from July 1, 1881. The total distribution to shareholders, comprising the guaranteed dividend of 8%, and a bonus, amounted to $165,000.

The Great North Western Telegraph Co., at the adjourned annual meeting, Dec. 30, elected Z. A. Lash, K.C., a director of the Canadian Northern Ry., to be President, vice H. P. Dwight, deceased. The other directors and officers for the current year are: Vice President, Adam Brown; other directors, J. Hedley, Hon. J. K. Kerr, Aemilius Jarvis, F. B. Hayes, Toronto; J. B. VanEvery and N. Carlton, New York; General Manager, G. D. Perry; Secretary and Auditor, A. C. McConnell; Treasurer, D. E. Henry.

The Great North Western Telegraph Co. announces effective, Jan. 1, the rate on deferred cable messages between Canada and the United Kingdom, is reduced to 9c, subject to delivery within 24 hours of the time filed. The rate for cable letters is also reduced to 75c for 12 words and 5c for each additional word. These latter are to be delivered on the day following, and weekend letters on Mondays, in each case 24 hours earlier than at present. These charges include transmission to the cable terminal at Montreal, but if the messages are addressed to other places in the United Kingdom than London or Liverpool, an extra charge of 1c a word is made.

The Chicago, Burlington and Quincy Ry. is sending a medical examiner over its lines to inspect the water and ice used in passenger cars, dining cars and station restaurants, and to investigate the sanitary conditions along the line.

Railway Development.

Projected Lines, Surveys, Construction, Betterments, Etc.

Alberta Interurban Ry.—The route map of the second of the lines proposed to be built by this company has been approved by the Minister of Railways. The first line is projected easterly and northerly from Calgary to Carbon; the second one is westerly and northerly from Calgary to near Cochrane, on the Bow River. (Jan., pg. 20.)

Alma and Jonquieres Ry.—The Quebec Legislature has incorporated a company with this title to build the railway previously described. (Dec., 1912, pg. 604.)

Athabasca and Grande Prairie Ry.—The Dominion Parliament is being asked to incorporate a company with this title to build a railway from the junction of the Solomon and Athabasca Rivers northwesterly to the junction of the Smokey and Muskeg Rivers, thence northwesterly to Dunvegan, passing through Grande Prairie west of Bear Lake, Alta. Pringle and Guthrie, Ottawa, are solicitors for applicants.

Calumet and Northern Ry.—The Quebec Legislature has incorporated a company with this title to build the railway previously mentioned. (Nov., 1912, pg. 557.)

Canada Western Ry.—Application is being made to the Dominion Parliament for an act extending the time for the building of the railway authorized by chap. 69 of the Dominion statutes, 1909, and varying the route as set out in sec. 7 by striking out the last four lines of sub sec. A and substituting the following:—"From near Coutts on the International boundary, Alta., in a northerly and westerly direction to Cardston, and thence northwesterly to Pincher Creek, Alta." Hough, Campbell and Ferguson, Winnipeg, Man., are the solicitors. (Jan., pg. 20.)

Canadian Central and Labrador Ry.—Application is being made to the Dominion Parliament to incorporate a company with this title to build a railway from Cochrane, Ont., northeasterly to Cape St. Lewis, on the Atlantic Coast, with a branch line to Quebec and another to the Hamilton River. Smith and Johnston, Ottawa, are solicitors for applicants.

Chinook Ry.—Application is being made to the Alberta Legislature to incorporate a company with this title to build a line from the Chinook Coal Co.'s mines at sec. 12, tp. 10, range 22, west 4th meridian, to the C.P.R. Crowsnest Branch near Kipp, Alta. Shepherd and Dunlop, Lethbridge, Alta., are solicitors for applicants.

Coal Coulee Ry.—The Alberta Legislature is being asked to incorporate a company with this title to build a railway from Barnwell on the C.P.R. Crowsnest 10, tp. 10, range 17, west of 4th meridian, thence to branch out in several directions, with such branches and spurs as may be necessary to reach the coal properties being developed. Johnstone and Ritchie, Lethbridge, Alta., are solicitors for applicants.

Dominion Atlantic Ry.—Since the C.P.R obtained control of the D.A. Ry. a considerable amount of betterments has been put in hand. The bridge work proposed to be done was described on pg. 843 of our issue of Sept., 1911, and details of the work to be done on the Smiths Cove bridge was given on pg. 557 of our issue of Oct., 1912. This bridge work has either been completed or in process of completion. We are advised that a wharf, 518 ft. long, has been completed at Yarmouth, N.S., and 570 ft. of trestle work has been built in connection with it, so as to take the cars alongside the steamships. On the new wharf is a building, 150 by 50 ft., provided with slips, freight, customs and express offices. It is expected that considerable further work, which, with that done last year, will practically mean a rebuilding of the line, will be gone on with during this year. (Dec., 1912, pg. 604.)

Duluth and Northern Minnesota Ry.—Press reports state that this line, which now terminates at Cramer, Minn., is to be extended to the International boundary, and thence to Fort William, Ont. — Hare, Civil Engineer, is reported to have been in Fort William recently, completing arrangements for the making of surveys for the section of the line in Canada. (Jan., pg. 20.)

Edmonton, Dunvegan and British Columbia Ry.—In connection with the construction of this line, an issue of $3,500,000 of 4% bonds has been listed on the London, Eng., stock exchange.

The Board of Railway Commissioners has approved location plans from mileage 68.30 out of Edmonton to the east side of the Athabasca River, Alta., mileage 130.

The Minister of Railways has approved revised route map for the line in tps. 62-70, range 27 west of the 4th, and ranges one and two west of the 5th meridian, Alta., about 50 miles. (Jan., pg. 20.)

Gananoque, Perth and Lanark Ry.—The Ontario Legislature is being asked to incorporate a company with this title to build a railway from Gananoque to Lanark, with a branch from Morton northerly to Portland, and other branches as may be expedient. J. C. Judd, Ottawa, is solicitor for applicants. (See Gananoque to Elgin, Dec., 1912, pg. 604.)

Hudson Bay, Peace River and Pacific Ry.—Application is being made to the Dominion Parliament to extend the time within which the railway authorized by chap. 93 of the statutes of 1911 may be built. Lewis and Smellie, Ottawa, are solicitors for applicants.

The Minister of Railways has approved route map from near Winnipeg, at the crossing of the Winnipeg River, towards Port Nelson, Man., for 7.50 miles.

The route of this projected railway extends from Winnipeg to where the Winnipeg River flows into Lake Winnipeg, and thence to Port Nelson, Hudson Bay. The directors of the company are:—President, R. M. Simpson; directors—Hon. D. C. Cameron, F. W. Heubach, D. E. Sprague, R. C. MacDonald, F. W. Drewry, W. S. Evans, and R. D. Waugh, all of Winnipeg. (Mar., 1912, pg. 120.)

Huntingdon and Hemmingford Ry.—The Quebec Legislature has incorporated a company with this title, to build the line previously mentioned. (Nov., 1912, pg. 558.)

Intercolonial Ry.—We are officially advised that the following new structures were completed during 1912:—Freight shed, Halifax, N.S.; brick freight shed, Truro, N.S.; six stall engine house, Point Tupper, N.S.; passenger stations, Mulgrave, Sayabec and Nelson, Chatham, Fredericton; and an extension to the general office building at Moncton. The following works were started during the year, and are also under construction:—Concrete pile pier at Halifax, N.S.; passenger stations at Truro and Point Tupper, N.S. (Jan., pg. 20.)

Intermarine Ry. and Navigation Co.—Application is being made to the Manitoba Legislature to incorporate a company with this title. The notice, over the name of W. S. Boyd, Winnipeg, solicitor to the applicants, does not disclose any further particulars.

Kettle Valley Lines.—J. J. Warren, President, in a recent interview is reported as stating that everything is favorable to seeing the completion of the line to a junction with the C.P.R., near Hope, B.C., by the autumn of 1914. Track laying has been completed for 46 miles out of Midway, and a limited train service is being operated thereon. The 90 miles from track end to Penticton is under construction, while steel has been laid from Penticton to Trout Creek. At this point a large steel bridge is under construction. Grading has been completed on the 30 miles from Trout Creek to Osprey Lake, and another 30 miles from Otter Summit to Merritt has been completed, and a train service put in operation. The extension to Hope branches off some 26 miles south of Merritt and grading is being pushed forward on the first 13 miles.

J. J. Warren, President, K.V.L., and officers of the Great Northern Ry. have recently been in conference with reference to the construction and operation of what is known as the Hope Mountain division. It is said an agreement has been reached for the construction by the K.V. Ry. of the line and for its joint operation.

Press reports state that a contract has been let to G. Chew for the grading of 12 miles. (Jan., pg. 20.)

Kootenay River to Blue Joe Creek, B.C.—The British Columbia Legislature is being asked to incorporate a company to build a standard or narrow gauge railway to be operated by steam, electricity or any other motive power, from the International boundary about nine miles west of the Kootenay River, westerly along the river valley, to the International boundary, where it is crossed by Blue Joe Creek, B.C. F. A. McDiarmid, Victoria, B.C., is solicitor for applicants.

L'Avenir and Melbourne Ry.—The Quebec Legislature has extended the line within which the company may build its projected line. (Dec., 1912, pg. 605.)

Little Nation River Ry.—The Quebec Legislature has extended the time for the building of this line. (Jan., pg. 20.)

Minneapolis, St. Paul and Sault Ste. Marie Ry.—Press reports state that a contract has been let to Foley, Welch and Stewart for the building of an extension from Ambrose, N.D., westerly for 75 miles. Ambrose is immediately south of the International boundary, and the line will run parallel to the C.P.R.'s Estevan and Weyburn-Lethbridge line. (Nov., 1912, pg. 558.)

Newfoundland.—Press reports state that the Newfoundland Government has entered into a contract for building railway from Green Bay on the east coast to Bay of Islands on the west coast of the island, 88 miles. The projected railway is said to be part of a project for the shortening of the time taken in making the trip from Great Britain to Canada. It is proposed to run a ferry service from Bay of Islands to Gaspe, Que., and negotiations are said to be in progress with various shipping companies for the inauguration of a steamship service between a British port and Green Bay. (Jan., pg. 28.)

North Ry.—The Dominion Parliament is being asked to declare the railway which this company has been authorized by the Quebec Legislature to build to be a work for the general advantage of Canada; to confirm so far as Dominion Parliament can do all the rights, powers and privileges granted by the Quebec Legislature, to build additional lines to Ottawa, from Montreal to Quebec; and from Montreal and Quebec to the International boundary in the states of Maine, New Hampshire and Vermont, and power to build a bridge across or a tunnel under the St. Lawrence River.

The Quebec Legislature has passed an act varying the subsidy voted last year in aid of the building of the line from Montreal to the mouth of the Nottaway River on Hudson Bay. The original grant was of 4,000 acres of land a mile for the line from Montreal to the junction with the National Transcontinental Ry. at mileage 837 west of Moncton, N.B., and 5,000 acres of land a mile for the remaining mileage, the total length of the line being 650 miles. The act recently passed doubles the land subsidy, provides that it may not be converted into money by the province, gives the company the right of the ownership of mines and minerals in one-fifth of the land, provided the selection is made within five years; gives the company power to apply to the government for the grant of any water power along the route of the line as may be necessary for its purposes, at a rental of 50 cents a year per horsepower developed, provided the application is made within 15 years. (Jan., pg. 21.)

Pacific and Peace River Ry.—The Dominion Parliament is being asked to extend the time within which the company may build the line authorized by chap. 127 of the statutes of 1911. J. A. Ritchie, Ottawa, is solicitor for applicants. (April, 1912, pg. 182.)

Pacific Great Eastern Ry.—The land held by the Howe Sound and Northern Development Co., at Newport, B.C., has been transferred to the P.G.E. Development Co. It is proposed to develop the property by the erection of docks and wharves for ocean going vessels, and extensive railway terminals. In a recent speech the Premier of British Columbia is reported to have said that the terminals of the line would be in North Vancouver, where it had been arranged to lay out $10,000,000 in providing terminal facilities. D'Arcy Tate, Vice President, is reported as stating that at present it is more advantageous to spend money on construction northerly from Newport, than between North Vancouver and Newport. The entire line, however, will be built within contract time, although the North Vancouver-Newport section of 45 miles will be the last piece to be built.

The Premier of British Columbia is reported as having stated, Jan. 2, that arrangements will probably be completed during the year with the P.G.E. Ry. for the extension of the line beyond Fort George into the Peace River country, and probably on to the Alaskan boundary. (Jan., pg. 21.)

Quebec and Northeastern Ry.—The Quebec Legislature has incorporated a company with this title to build the railway already mentioned. (Nov., 1912, pg. 558.)

Roberval and Saguenay Ry.—The Quebec Legislature has extended the time within which this projected railway may be built, and has changed its name to that of La Compagnie du Chemin de Fer Le Nord, and authorized to acquire the Ha Ha Bay Ry. line, charter, etc. (Dec., 1912, pg. 605.)

St. John and Quebec Ry.—A. R. Gould, President, is reported as having stated, Jan. 9, that construction on the line from near St. John to Grand Falls, N.B., is being proceeded with satisfactorily. Eleven steam shovels are at work on the Gagetown-Centreville section, where the principal work is in progress. Orders have been placed for 16,000 tons of 80 lb. rails for delivery in June and July. These with the orders previously placed will be sufficient to lay the 120 miles between Gagetown and Centreville.

A survey is being made by the Aroostook Valley Ry. for a line across the state of Maine and through the province of Quebec to the bridge now under construction across the St. Lawrence River, near Quebec city. This work was started two years ago, and Mr. Gould added, the work now in progress is merely a continuance. He is President of both companies. (Nov., 1912, pg. 558.)

Saskatoon Transfer Ry.—This projected line will commence on the C.P.R. just west of the city limits of Saskatoon, Sask., and run south, connecting with the main line of the G.T. Pacific and the Goose Lake Branch of the Canadian Northern Ry. where these two lines cross. It will also extend eastward parallel with he C.N.R. to where the C.N.R. and the C.P.R. run parallel, and there connect with the C.P.R. again. The total length of the line will be about four miles, and connections will be made with the other railways by means of 12 degree curves. The line running south from the C.P.R. to the diamond permits of easy gradients and follows closely the level of the ground. The land on both sides of the line is being laid out for factory sites, and the gradients are such as to render it easy for spurs to be laid to the proposed manufacturing plants to be established there. The Saskatoon Land and Investment Co. is largely interested in the project. Brown and Loucks, civil engineers, Saskatoon, are the company's engineers. (Nov., 1912, pg. 558.)

Southampton Ry.—The Dominion Parliament is being asked to declare this railway (built under an act of the Nova Scotia Legislature) to be a work for the general advantage of Canada, and to authorize the lease of the line and undertaking to the C.P.R. Pringle, Thompson and Burgess, Ottawa, are solicitors for applicants. (Sept., 1912, pg. 451.)

Timiskaming and Northern Ontario Ry.—The bridge over the Montreal River, on the Elk Lake Branch, has been completed, and it was expected that track laying on the remaining 6.50 miles of the branch into Elk Lake, Ont., would b completed by Jan. 27. Work trains are being operated over the line as far as the Montreal River, and it is expected to have a regular train service in operation by Feb. 3. (Jan., pg. 21.)

J. L. Englehart, Chairman of the T. and N.O. Ry. Commission, is reported as stating that it is proposed to lay sidings 4,000 or 5,000 ft. in length, about seven miles apart on the line. Several of these sidings have already been laid, and others will be laid during the current year.

A spur line of seven miles from Iroquois Falls, to the Abitibi River Falls, is to be built at an early date. This line will start about half a mile north of Iroquois Falls station and will terminate at the site of the mills of the Abitibi Pulp and Paper Co's. mills now being built.

Vancouver, B.C.—An offer was submitted to the Vancouver city council, Jan. 6, to lease the False Creek flats for 99 years, and to lay out terminals similar to those proposed by the Canadian Northern Ry. The C.N.R. is negotiating for a lease of the flats in perpetuity. The offer, press reports state, is being made on behalf of a company which proposes to lay out terminals which will be open to all railways entering Vancouver. (See also Canadian Northern Ry. Construction, etc.)

Vancouver Island-Mainland Bridge.—The project for the erection of a railway and general traffic bridge to connect Vancouver Island with the mainland of British Columbia is again to the front. The proposed site of the bridge is at Seymours Narrows, a point which was recommended as a probable site for a bridge during the early Government surveys for the C.P.R. The Minister of Public Works recently announced that he was making arrangements for the sending out of a survey party to investigate the matter as soon as possible in the spring.

Western Dominion Ry.—The Board of Railway Commissioners has approved of location plans of the line from sec. 34, tp. 6, range 1 west of the 5th meridian, at a junction with the located line of the projected Pincher Creek, Cardston and Montana Ry. to the Sarcee Indian Reserve, 130 miles. (Dec., 1912, pg. 605.)

Winnipeg to Hudson Bay.—At the opening of the current session of the Manitoba Legislature, Jan. 9, the Lieut.-Governor announced that it was the intention of the Government to secure connection with the main line of the Hudson Bay Ry., now being built by the Dominion Government, by the extension of one of the railway systems of the province, thereby providing most direct communication to Hudson Bay for the benefit of the people of the province.

Toronto Viaduct Proposals.

Representatives of the C.P.R. and G.T.R. waited on the Government at Ottawa, Jan. 13 to obtain a stay in the putting in operation of the Board of Railway Commissioners' order for the building of a viaduct along the Toronto water front from Bay St., east to the Don river. The object for which the stay was required was to have new plans considered for the work, and the companies promised to go ahead with the work immediately upon the decision of the Board whatever it might be. They abandoned their previous suggestion that a series of bridges be built, instead of a viaduct and suggested the building of a six track viaduct for the most part on filled land south of the present tracks, directly along the Sts., and thence across the Don river to a junction with the viaduct as originally proposed. The new plan does not contemplate any alteration in the viaduct plans west of Bay St., nor any material alteration as it affects the proposed new Union station. Counsel for the City of Toronto opposed the new proposals, on the ground that they would necessitate greatly increased damage for interference with properties, and ignore the wharves, etc., on the water front.

The Premier stated that a decision would be given at an early date. There had already been a delay of three and a half years in carrying out the original order. The present application should more properly have been directed to the Board of Railway Commissioners, who had power to reopen the question if they saw fit on the presentation of new objections or of an alternative plan, "but at the present moment," added Mr. Borden, "I would not be prepared to direct the Commissioners on such a matter."

C. P. R. Hotels.—In an interview in Winnipeg, Jan. 20, Hayter Reed, Manager in Chief C.P.R. Hotel, is quoted as stating that about 260 rooms with other necessary additions will be added to the Royal Alexandra Hotel there. Work will be started in the spring, and will be completed during the year. It is intended during the year to add to the hotels at Montreal, Banff, Glacier, and other places, but just exactly to what extent he could not state. The roof is being put on the new hotel at Calgary; and the extensions to the hotel at Vancouver and Victoria are in progress.

Electric Railway Department.

New Cars on the Winnipeg Electric Railway.

So successful has the type of car in use on the Winnipeg Electric Ry. proved during the past two years, that a considerable number have been and are being added to the equipment, 40 having been added in 1911, and the same number in 1912, all built in the company's Fort Rouge shops. The fact that the design has in no way been altered in the last two years is proof positive of their particular adaptability to the Winnipeg conditions of operation. The car and its details are shown in the accompanying five illustrations.

In general arrangement, figs. 1 and 2, these cars differ from those to be found under normal conditions of operation, but the severe winters to be considered in the operation of the Winnipeg line demand a modification of conventional designs if the comfort of the passengers is to be considered, and if the traffic is to be handled expeditiously. It will be noticed that the principal point of difference in construction demanded by this severe weather is the arrangement of entrance and exit both through the rear end. The front end is permanently closed to egress except by the motorman, and for his convenience there is a two step metal ladder dropping sheer from the side of the car from the front vestibule door.

A general impression gathered is that the car is rather higher set than conventional practice dictates elsewhere, but any inconvenience in entering or leaving, from the fact that the car body is high, is eliminated by the convenient arrangement of steps at the rear, these being so set into the rear vestibule as to make it possible to have two well proportioned steps, which, in addition to having the vestibule on a lower level than the car interior, makes entrance and egress very easy. The entrance and exit are separated by a pipe post and brass hand rail, the entrance being next the car body and the exit at the rear of the vestibule.

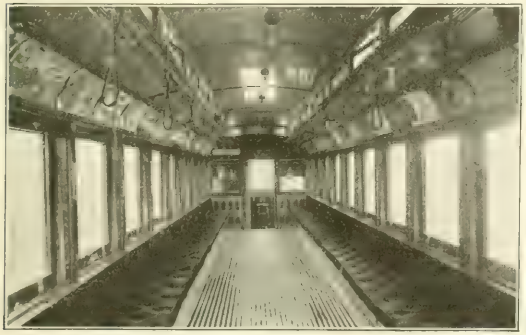


Fig. 2.—Interior of Winnipeg Electric Ry. New Car.

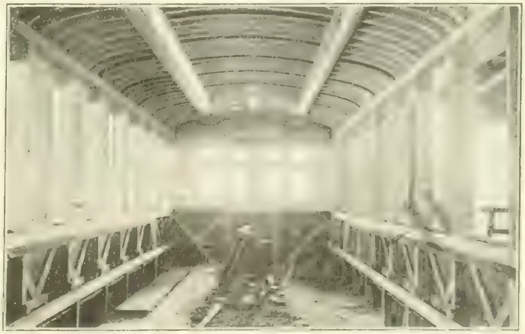


Fig. 3.—Unfinished Interior of New Car.

The interior arrangement is shown in fig. 2. The seats are arranged lengthwise of the car, permitting of easier internal movement of the passengers and conductor. From the rear, there is a central wide, double door entrance, whereas at the front there is only a single narrow door for the convenience of the motorman, passengers not having access to the front vestibule. The interior arrangement of the front vestibule is shown in fig. 2.

The seat cushions and backs are finished in green plush. The interior woodwork finish is in cherry and oak, the outside being finished in cherry sheathing, with the posts, etc., finished in yellow as fig. 1 shows. The deck sashes open by levers from the inside, the front ones opening to the front, and the rear ones to the rear, making ample provision for a good circulation of air through the car, from front to rear, when desired. The heating is from a hot air heater in the front vestibule, from which a pipe passes under the seats on the left side of the car, with outlets arranged at convenient intervals. The interior lighting arrangement consists of 6 lights down the centre of the car and 5 down each side under the deck.

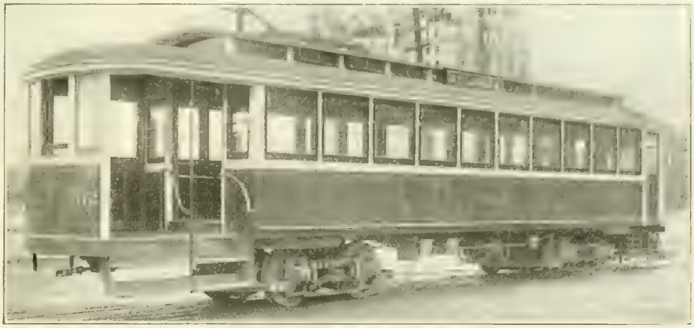


Fig. 1.—Latest Type of Car on Winnipeg Electric Railway.

The length of car body is 33 ft., and it is 45 ft. over bumpers, with an overall width of 8 ft. 4¾ ins., made possible by the wide devil strips used in Winnipeg. The car body frame is built up around two centre sills of 8 in. I beams, filled out with wood fillers in the channel recess on each side of the I beam, and on two 6 by 8 in. wooden side sills. Under the centre of the car, at 7 ft. centres, are two needle beams,—8 in. I beams—on the under side of which, below the sills, are queen posts 3 ins. high, up against which the truss rods bear. These truss rods 1¼ in. diameter, with centre turnbuckles, pass up through the end sills of the car along the line of the [illegible] [illegible] out through the end sill just above the vestibule floor level, where they may be easily got at. The ends of the side [illegible] are also trussed up by means of inside truss rods, shown in fig. 3. Each of these side truss rods is a single length of ½ by 2 in. flat iron, resting on the top of the side posts of the body, as will be noted on the sides in fig. 3, in the notches shown in fig. 4. This rod bends downward at the second post from each end, connecting to a 1¼ in. rod through a pin connection, the rod coming out through the end sills, just in front of the step side as shown in fig. 1, where the end is accessible for tightening up. The side construction of the car body is shown to advantage in fig. 5, where it will be noted that the frame is thoroughly braced, which with the trusses makes for a very solid construction.

The side posts are 5¼ by 2¼ ins., to top of each of which is connected a carline, formed of 1¾ by ½ in. bar stock. The roof is solidly supported thereby, and in addition, it is trussed under the sashes as shown in fig. 2.

The front vestibule is 3½ ft. deep, and the rear one 6½ ft. deep, both 6 ins. below the level of the car floor. Both vestibules are supported on 5 by 5 [illegible] four in each case, connecting to the sills of the car. The centre angles have a leg turned upward, this leg attached to the wood filler of the centre sill, and the outer angles with a leg downward, the other leg being attached to the lower face of the side sill. The angles on the step side are given an offset.

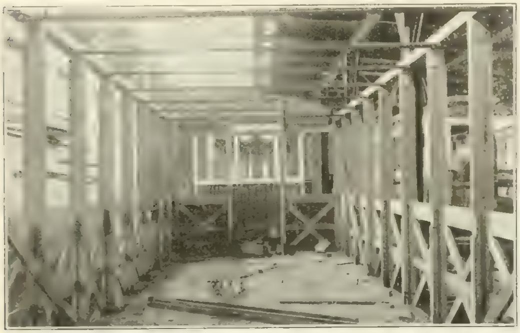


Fig. 4.—Skeleton Framework of Car Interior.

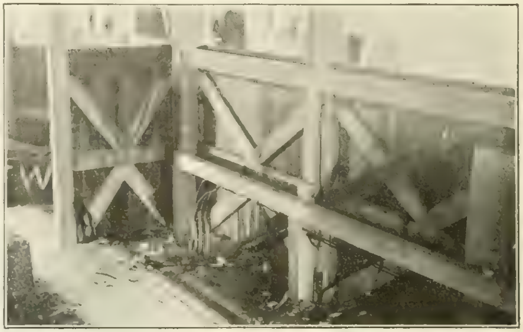


Fig. 5.—Detail View of Car Corner Framing.

The car is mounted on Brill trucks, on each of which there are two G80 motors, 40 h.p. each, operated by the motorman through a K6 controller. The car is equipped with air brakes, supplied from a motor driven air compressor unit under the car. In the front vestibule, to the left of the motorman, is located the hot air heater, above which is mounted a bell ringing transformer, connected to the push buttons in the window posts of the car, so that no batteries or dry cells are required to be carried, power being drawn from the line.

The foregoing information was obtained through the courtesy of Wilson Phillips, Superintendent, and G. Garrett, Master Mechanic, Winnipeg Electric Ry.

British Columbia Electric Railway Company's Equipment Orders.

The January issue of Canadian Railway and Marine World contained mention of rolling stock orders placed by the British Columbia Electric Ry., consequent on the increase of mileage put into operation, and the increased traffic generally. Following is a complete list of the rolling stock ordered in 1912, some items of which are for delivery in 1913, as mentioned in our last issue.

22 closed, 40 ft. body, interurban cars, 51 ft. long over all, multiple unit control; and 6 similar cars, with toilet room added, from St. Louis Car Co.

35 semi-convertible, p.a.y.e. city cars, 30 ft. body, 43 ft. long over all, single end trucks and bodies, one closed stepless car, 34 ft. body, 44 ft. long over all; one near side city car, from J. G. Brill Co.

4 interurban baggage and express cars, 54 ft. long over all, multiple unit control, from Niles Car Co.

70 freight box cars, 60,000 lbs. capacity, 40 ft. long over all; 45 flat cars, 60,000 lbs. capacity, 41 ft. long over all, from Seattle Car and Mfg. Co.

6 Hart-Otis dump cars, all steel, 60,000 lbs. capacity, 28 ft. long over all, from Hart-Otis Car Co., Montreal.

2 double broom snow sweepers, single truck, 28 ft. long over all, from Ottawa Car Co.

5 electric locomotives, 60 tons capacity, 1,000 h.p., 600-1200 volt, 36 ft. long over all, from Westinghouse Co.

30 Westinghouse 1,200 volt passenger equipments, 125 h.p. motors, multiple unit field control, for cars already in operation, from Canadian Westinghouse Co.

65 semi-convertible city p.a.y.e. cars, single ended, 30 ft. body, 44 ft. long over all, for 1913 delivery, from Preston Car and Coach Co.

The Toronto Suburban Railway.

During 1912 substantial progress was made in the construction of the extensions planned, but work was delayed considerably by the scarcity of labor, by the difficulty in getting delivery of materials, and by wet weather. The whole of the extensions have been surveyed, and are under contract to be constructed. Grading on the Woodbridge extension is nearly complete, and grading is progressing vigorously on the Toronto to Cooksville, Georgetown and Guelph lines.

The present terminus of the existing railway lines is situated well within the limits of Toronto at Bathurst St., where the company's lines connect with the Toronto Ry. From this terminus the company's line runs northwesterly to Weston and Lambton Mills, and it is being extended from Weston to Woodbridge, and from Lambton Mills to Guelph, serving and connecting Islington, Summerville, Dixie, Cooksville, Erindale, Streetsville, Meadowvale, Churchville, Huttonville, Norval, Georgetown, Glen Williams, Acton, Milton, Brampton and Guelph. These extensions will be constructed for the most part upon private right of way. When they are completed the company will own a fully equipped electric railway of approximately 90 miles.

In addition to the terminal of the present lines in the west end of Toronto, the company has, under its franchise rights, secured right of way from the present terminal easterly to a point in the central portion of the city near St. George St. It is proposed that a terminal will be provided adjoining the C.P.R.'s North Toronto station and the terminus of the Toronto and York Radial Ry., and one of the principal Canadian Northern Ry. stations. This right of way into the city will enable passengers to transfer from the company's line to six different lines of the Toronto Ry. running north and south, thus affording every facility to passengers entering Toronto on the company's lines to reach any part of the city within a few minutes.

The company has already in operation, or in course of erection, 30 miles of transmission lines in Toronto and surrounding districts. Electric current for light, heating and power purposes is obtained from one of the large Niagara water power companies. The company intends to utilize the right of way in connection with the railway for the purpose of extending its transmission lines and taking advantage of the large demand for electric current for lighting, heating and power purposes in the districts which will be served by the railway.

From their knowledge of the districts to be served, the directors anticipate a profitable revenue immediately on the opening of the new lines, which are expected to be completed this year. Although only a small portion of the total railway mileage mentioned above is yet in operation, the results are entirely satisfactory. For the year ended June 30, 1912, the number of passengers carried was 1,462,656, compared with 1,047,191 for the previous year, an increase of 39.67%, and the gross earnings per mile of railway were $6,389.64 a mile, compared with $5,484 for the previous year. It is anticipated that when the proposed lines are completed and the business fully developed, the gross earnings from the railway alone should amount to $500,000 a year, in addition to which a substantial revenue should be derived from the light, heat and power business. However, taking the figures on the basis of the results already obtained with only a small portion of the system in operation, the gross earnings would amount to $460,800 a year; the working expenses are estimated at $275,000, leaving estimated net earnings of $185,800.

The directors are Sir Wm. Mackenzie, President; A. H. Royce, Vice President; L. W. Mitchell, F. H. Phippen, G. C. Royce, Toronto; R. M. Horne-Payne, London, Eng.

Turnstiles on Prepayment Type of Street Cars have been prohibited in Dayton, Ohio, by the Ohio Public Service Commission. The Commission began, in May, an investigation of the safety and security of operation of the People's Ry., especially in the matter of the use of turnstiles at the points of car entrance. It was found that the turnstiles were wood and metal devices used for registering the number of persons entering the cars. These were attached to the vestibules of the cars so as to form a rigid obstacle and an impassable barrier in the way of passengers or persons seeking to enter or leave the car until the machinery was released, allowing the arms to turn or fall. It was found that this at times resulted in bruising or injuring passengers attempting to enter when passenger and conductor failed to act in exact unison. It was also found that the turnstiles created an additional element of danger in case of accident or other emergency necessitating prompt unloading of passengers.

Electric Railway Statistics for Year Ended June 30, 1912

[illegible] E., electric; E.R., electric railw[illegible] Ry., railway; S.R., street railway. [illegible]

	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Berlin S.R. (1)	3.20	$ 43,336	$	$ 26,637	$ 12,206	$ [illegible]	115,113	[illegible]
Berlin and Northern Ry.	2.40	7,993		[illegible]	[illegible]	[illegible]	32,000	191,992
Brantford and Hamilton Ry. (2)	23.00	130,935		83,508	68,396	—21,609	323,355	486,329
British Columbia E.R. (3)	200.22	3,629,048		2,543,382			[illegible]	62,154,116
Calgary Municipal Ry. (4)	42.00	472,240		282,600	47,264	149,375	1,643,328	[illegible]
Cape Breton E.R. (5)	30.52	212,924	111,191	126,783	100,789	96,543	622,140	4,044,092
Chatham, Wallaceburg and Lake Erie Ry. (6)	38.94	[illegible]		[illegible]	37,768	9,436	236,751	374,816
Cornwall E.R. (7)	4.00	[illegible]		23,948		8,305	217,028	411,016
Edmonton Radial Ry. (8)	27.50	354,549		314,696	83,941	—44,089	953,054	8,385,178
Galt, Preston and Hespeler E.R. (9)	17.81	179,606	80	104,271	5,954	[illegible]	289,642	1,110,725
Grand Valley Ry. (10)	38.29	95,772		75,867	3,384	16,521	[illegible]	1,338,776
Guelph Radial Ry. (11)	8.00	34,182		25,105	1,627	7,449	279,000	820,836
Halifax Electric Tramways Co.	5.41	241,424	157,065	129,293	42,023	227,172	915,239	5,428,495
Hamilton and Dundas E.R. (2)	7.00	59,291		42,178	6,096	11,016	133,119	645,059
Hamilton, Grimsby and Beamsville E.R. (2)	22.00	128,449		109,363	10,762	8,322	364,900	632,341
Hamilton Radial Ry. (2)	25.00	173,761		123,024	40,381	10,355	557,770	2,289,947
Hamilton S.R. (2)	22.00	512,496		297,439	78,770	136,286	1,817,946	12,322,744
Hull E.R. (9)	14.12	125,467	33,818	102,668	1,001	55,616	819,313	2,028,249
International Transit Co. (12)	3.68	104,958		41,429	15,052	48,476	291,829	1,957,225
Kingston, Portsmouth and Cataraqui E.R.	8.00	36,285		13,716	5,920	—351	199,680	856,540
Levis County Ry.	10.25	71,523	557	61,370	13,519	—2,808	371,760	1,448,541
London S.R.	26.73	293,614	15	194,637	34,253	64,638	1,452,351	7,908,572
London and L. Erie Ry. and Transport. Co. (13)	27.50	130,350	78	80,200	37,747	12,480	406,434	637,056
Moncton Tramway	2.06	6,675		6,631			35,476	145,025
Montreal Park and Island Ry. (14)	29.37	387,999		251,245	161,143	—24,388	1,358,357	4,999,336
Montreal S.R. (14)	76.67	4,670,827	130,852	2,664,148	577,579	1,560,452	16,117,398	115,455,205
Montreal Terminal Ry. (14)	18.22	134,019		122,116	48,693	—36,789	678,643	1,917,795
Montreal and Southern Counties Ry. (15)	9.10	105,793	216	91,365	1,351	13,292	268,697	1,354,510
Moose Jaw E.R.	6.00	37,794		28,982			216,074	793,486
Nelson S.R. (16)	1.25	12,574		13,080	1,897	—2,404	53,664	308,823
Niagara Falls Park and River Ry. (17)	11.91	379,802	10	268,445	83,812	27,554	316,683	1,339,458
Niagara, St. Catharines and Toronto Ry.	47.76	149,500	8,349	80,387	33,500	43,967	947,859	3,499,613
Nipissing Central Ry. (18)	5.01	55,308	438	34,367	19	21,360	146,847	715,315
Oshawa Ry. (19)	7.81	92,519	347	69,844	4,316	18,706	61,708	197,931
Ottawa E.R. (20)	23.56	908,305		510,460	56,890	340,955	4,366,284	20,891,122
Peterborough Radial Ry.	6.04	39,187		34,962	4,314	—89	256,662	864,785
Picton County Ry.	7.90	56,253	34,415	31,480	40,545	18,643	135,662	1,171,470
Port Arthur and Ft. Wm. E.R. (21)	25.33	196,679	2,374	122,396			948,900	4,541,011
Quebec Ry., Light and Power Co. (22)								
Citadel Division	17.22	379,491		223,737			1,782,928	8,795,995
Montmorency Division	28.00	198,512		140,530			397,412	1,445,165
Sandwich, Windsor and Amherstburg Ry. (23)	36.63	217,765	47,179	122,413	35,760	106,771	923,257	3,769,603
Sarnia S.R.	8.25	49,931		33,153	4,444	12,333	143,990	878,765
Sherbrooke S.R.	9.00	42,928	46,512	36,400	54,392	—1,352	423,200	1,064,003
St. John Ry. (24)	12.50	191,412	96,030	148,266	51,613	87,561	1,033,454	4,330,339
St. Stephen E.R. (25)	4.00	31,484	1,078	26,512	5,649	400	183,960	617,091
St. Thomas E.R. (26)	7.00	20,988		26,398			281,700	470,609
Suburban Rapid Transit Co. (29)	19.61	48,422	8,016	53,051	26,417	—23,030	[illegible]	973,663
Toronto Ry. (27)	57.98	5,160,448		2,703,747	1,071,277	1,385,424	18,543,297	128,317,403
Toronto Suburban Ry. (27)	9.84	78,763	2,729	54,570	6,384	[illegible]	248,675	1,462,656
Toronto and York Radial Ry. (27)	72.43	469,700		293,140	122,123	54,535	1,264,693	4,532,504
Windsor, Essex and Lake Shore Rapid Ry. (28)	36.16	128,823		76,642	54,914	—2,732	358,603	419,786
Winnipeg E.R. (29)	79.95	1,937,216	935,659	1,035,779	412,886	1,424,211	6,801,865	45,181,690
Winnipeg, Selkirk and Lake Winnipeg Ry. (29)	21.44	95,483		50,615	23,595	21,272	170,200	355,576
Yarmouth E.R.	3.00	20,908		19,229	2,730	—1,045	63,976	151,694
	1308.17	$23,499,250	$1,617,017	$14,266,674	$3,533,655	$6,097,722 —160,690 $5,937,032	82,070,064	488,865,682

Notes to Electric Railway Statistics.

(1) The B.S. Ry. is owned by the City of Berlin, Ont.; it has 0.78 mile of double track and 0.41 mile of sidings.

(2) The B. and H. Ry., the H. and D. Ry., the H.G. and B.E.R., the H.R.R., and the H.S.R. are owned by the Dominion Power and Transmission Co. The B. and H. Ry. freight car mileage was 29,538, and 4,978 tons of freight were carried. The H. and D. Ry. freight car mileage was 98, and 227 tons of freight were carried. The H. G. and B.E. Ry. freight car mileage was 48,878, and 64,160 tons of freight were carried. The H.R. Ry. has 8.69 miles of double track; its freight cars ran 21,819 miles and carried 11,951 tons of freight.

(3) The B.C.E. Ry. has 59.40 miles of double track lines, and 27.59 miles of sidings; it leases 140.66 miles of track, including the Vancouver and Lulu Island Ry. from the C.P.R., and the Vancouver, Fraser Valley and Southern Ry. Its freight cars ran 905,027 miles and carried 256,083 tons of freight.

(4) The C.M.R. is owned by the City of Calgary, Alta.; it has 10 miles of double track, and one mile of sidings.

(5) The C.B.E.R. is owned by the Cape Breton Electric Co., which operates an electric lighting, and power, service and a ferry service. It has 1.05 miles of sidings.

(6) The C.W. and L.E. Ry. has six miles of sidings. Its freight cars ran 39,270 miles and carried 71,347 tons of freight.

(7) The C.E. Ry. has 2.50 miles of sidings.

(8) The E.R.R. is owned by the City of Edmonton, Alta.

(9) The G.P. and H.E.R. is operated by the C.P.R., as also is the Hull E.R. The G.P. and H.E.R. has 1.36 miles of double track, and 2.25 miles of sidings. Its freight cars ran 39,565 miles, and carried 153,729 tons of freight. The H.E.R. has 10.60 miles of double track, and 1.12 miles of sidings, and it leases 1.82 miles of track. Its freight cars ran 26,864 miles and carried 5,719 tons.

(10) The G.V.R. owns also the Brantford E. Ry. and the Woodstock, Thames Valley and Ingersoll, and its mileage includes these three lines. There are 1.95 miles of double track on these lines. It carried 264 tons of freight.

(11) The G.R. Ry. is owned by the City of Guelph, Ont.; it has 0.33 mile of sidings. It carried 7,000 tons of freight, running 7,000 miles of freight car mileage.

(12) The I.T. Co. is owned by the Lake Superior Corporation, which also owns the Trans St. Mary E. Ry., in Sault Ste. Marie, Mich., with which the I.T. Co. is connected by a bridge. It has 0.22 mile of sidings.

(13) The L. and L.E. Ry. and T.C. reports freight car mileage. 42,454 miles, and 6.995 tons of freight carried.

(14) The Montreal Tramways Co. owns the M.P. and I. Ry., the M.S. Ry., and the M.T. Ry. The M.P. and I. Ry. has 16.03 miles of double track, and 4.68 miles of sidings. It carried 111.005 tons of freight, with 21.579 miles of freight car mileage. The M.S. Ry. has 60.10 miles of double track, and 17.59 miles of sidings; it also leases 8.64 miles of track. It operated freight cars over 171.217 miles, and carried 100.000 tons of freight. The M.T. Co. has 4.28 miles of double track, and 6.55 miles of sidings. It carried 91.302 tons of freight, its freight car mileage being 62.363.

All the figures given for these three companies are those for the year ended June 30, 1911, the companies not having reported for 1912.

(15) The M. and S.C. Ry. is controlled by the G.T.R.

(16) The N.S.R. leases 2.12 miles of track.

(17) The N.F.P and R. Ry. is owned by the International Ry., which also owns electric lines on the U.S. side of the Niagara frontier. It has 11.20 miles of double track, mile of sidings. It carried 261.390 tons of tons of freight.

(18) The N.C. Ry. is owned by the Ontario Government, through the Timiskaming and Northern Ontario Ry. Commission. It has 0.27 mile of double track, and 0.19 mile of sidings. It carried 261.090 tons of freight.

(19) The O. Ry. reports 26.254 miles of freight car mileage, 127.388 tons of freight being carried.

(20) The O.E. Ry. has 21.42 miles of double track, and 0.50 mile of sidings, and operates over 2.22 miles of branch lines.

(21) The P.A. and F.W.E.R. is owned by the cities of Port Arthur and Fort William, Ont., and is operated by a joint commission representing those cities. It carried 49.827 tons of freight.

(22) The Q. Ry., L. and P. Co. also operates a steam service over a portion of its lines, the statistics of which will be found under Steam Railway Statistics. There are 9.80 miles of double track, and three miles of sidings. It carried 4.500 tons of freight on the Citadel Division.

(23) The S.W. and A. Ry. owns the Windsor and Tecumseh E. Ry., and the figures given include those for the latter line. The S.W. and A. Ry. is controlled by the Detroit United Ry. Co.

(24) The St. J. Ry. has 6.50 miles of double track. The figures given are those for the year ended June 30, 1911, the company not having reported for 1912.

(25) The St. S. E. Ry. operates three miles of leased lines.

(26) The St. T.E. Ry. is owned by the city of St. Thomas, Ont.

(27) The Toronto Ry. owns the T. and Y.R. Ry., and interests allied with it; also owns the Toronto Suburban Ry. The T. Ry. has 55.39 miles of double track, and 7.07 miles of sidings. The T. and Y.R. Ry. has 9.57 miles of sidings. Its freight cars ran 88.317 miles and carried 60.490 tons.

(28) The W.E. and L.S.R. Ry. has 3.90 miles of sidings. Its freight cars ran 85,223 miles and carried 26.781 tons of freight.

(29) The Winnipeg Electric Ry. also owns the Suburban Transit Co., and the Winnipeg, Selkirk and Lake Winnipeg E.R. The latter company carried 4.556 tons of freight.

Advance in Fares on the Hull Electric Railway.

Canadian Railway and Marine World for December contained the award by a board of conciliation between the Hull Electric Co. and its employes, in which the board made the following recommendation:—"The members of the board are of the opinion that in view of the proposed increase of wages and considering the financial condition of the company, as shown by its annual statement, and the evidence given before the board, the company would be justified in increasing its charge for fares."

The company has since announced the following changes in its tariff. The fare to a section having an average distance of five miles from Ottawa has been increased from 5c. to 6¼c., e.g., 4 tickets for 25c. The fare to a section having an average distance of eight miles from Ottawa has been increased from 6¼c. to 8 1-3c., e.g., three tickets for 25c. The city fares remain unchanged.

The Electric Railway Statistics for the Year Ended June 30, 1912.

The statistical returns for the operation of electric railways for the year ended June 30, 1912, have been issued by the Department of Railways, having been compiled by the Comptroller of Railway Statistics, J. L. Payne. In the table given on another page, while figures are given for all the railways, it is to be noted that those for the three companies owned by the Montreal Tramways Co., and for the St. John Ry., are the figures for the previous year ended June 30, 1911, these companies not having reported for the recent operating year.

The total length of first main track is 1.308.17, while there have been 294.50 miles of second main track, and 120.84 miles of sidings. There was an increase of 84.44 miles of first main track, 34.76 miles of second main track, and 17.30 miles of sidings during the year.

The common stock liability of the several companies was $70.829.118, and the funded debt $52.018.828, a total of $122,841,946, an increase of $11.309.599 over the amount reported June 30, 1911.

The total earnings for the year were:—Passenger receipts, $22.007.750.15; freight receipts, $1.025.371.93; mail and express receipts, $78.818.66; other car earnings, $67,022.30; miscellaneous earnings, $320.287.27; gross earnings from operation, $23.499.250.31, against $20.356.952 for the previous year ended June 30, 1911. The operating expenses were $14.266.674.63, distributed as follows:—Maintenance of way and structures, $1,228.972.10; maintenance of equipment, $1.859.919.21; operation of power plants, $2.535.576.10; operation of cars, $6,770.560.47; general, $1.871.626.75. The net operating income was therefore $10.849,593.40, out of which was paid $1,581.802.81 for taxes; $1.570,202.02 for interest on funded debt; $193.068.26 interest on floating debt; $188.582.57 for other deductions, and "undistributed," $1.378.906.56, leaving net income for dividends to stockholders, etc., of $5.937.562.24. The "undistributed" amount refers to the British Columbia Electric Ry., which operates an electric lighting and power plant in addition to an electric railway.

The total number of fare passengers carried was 488.865,682, exclusive of 125.453.320 transfer passengers, showing an increase of 62.568,890, as compared with 1911. The total passenger car mileage was 80.402,089, and the freight and miscellaneous car mileage 1,667.975, an increase of 8.867.961 passenger car mileage, and of 583.297 in freight car mileage. The number of tons of freight handled was 1,435,525, compared with 1,228,362 for the previous year. The growth of freight business has steadily increased since 1901.

The total number of cars of all classes in service during the year was 4,478, against 4.325 in the previous year.

Following is a comparative table:—

	1910-11	1911-12
Mileage	1,224	1,308
Capital liability	$111,532,347	$122,841,946
Earnings	$20,356,952	$23,499,250
Operating expenses..	$12,096,134	$14,266,075
Fare passengers carried	426,296,792	488,865,682
Employes	13,671	14,760
Salaries and wages..	$8,550,215	$9,261,370
Tons of freight	1,228,362	1,435,525
Persons killed	102	110
Persons injured	2,670	3,128

Windsor, Essex and Lake Shore Rapid Railway.

The differences between the W.E. & L.S. Rapid Ry. and the town of Leamington, Ont., have been amicably settled. Under the franchise given the company by the town in 1907 the company was to build a spur line of 4,500 ft. to Lake Erie and to operate a car on it in June, July, August and September each year. The company did not build the spur, not being financially able to do so, and a bylaw was introduced in the town council recently to cancel the franchise unless the spur line was constructed and operated as required.

Finally the council accepted a proposition made by A. Eastman, General Manager, W.E. & L.S.R.R., to postpone the building of the spur for five years, the company in the meantime to operate a 20 passenger motor car between the town and the lake and to move into the centre of the street, at its own expense, a portion of the track that was built along the side of the street by order of the town.

Calgary Municipal Railway's New Equipment.

The commission operating the municipally owned electric railway in Calgary, Alta., has placed orders with the Ottawa Car Co. for cars and trailers, and with the Canadian Westinghouse Co. for motor and air brake equipment, as follows: 12 car bodies, each 46½ ft. long, at $3,165 each; 12 car bodies, each 41½ ft. long, at $3,420 each; 6 trailers, with side entrances, each 44 ft. long, at $3,467 each; 30 sets of complete trucks, type 22-G-1, $925 each; 24 complete quadruple motor equipments, $2,350 each; 24 complete air brake equipments, $236.90 each. Tenders were also considered at a recent meeting for a snow sweeper, and it was recommended that the tender of the Ottawa Car Co., at $1,500 f.o.b. Ottawa, be accepted, for immediate delivery, the amount to be paid out of the revenue chargeable against the amount to be raised by bylaw, as soon as the bylaw is passed. The cars just ordered, we are advised, are chiefly intended to be used between the city and the C.P.R. Ogden Shops, during rush hours.

The Victorian Legislative Council (Australia) has authorized the electrification of the Melbourne suburban lines. The plans provide for a 1,500 volt direct current.

The Gateshead and District Tramways Co. is reported to have decided to equip its entire service in the neighborhood of Gateshead, Eng., with pay as you enter cars. Several of these cars have been in use on the system for some time, and it is claimed that an increase of 7% in the receipts is attributable to their adoption.

Electric Railway Track Laid in 1912.

Below is a table showing track laid on electric railways in Canada during 1912 as officially reported to Canadian Railway and Marine World. The table is not published as a complete one, owing to the fact that some of the companies have not replied to the circular sent, but it is believed to be approximately correct. The total mileage of new tracks given in our last issue was 107.16, and the revised figure reduce this to 106.56, owing to second track work work having in some cases been reported as new mileage. In addition to the new mileage the British Columbia Electric Ry. laid 8.54 miles, the Halifax Electric Tramways Co., 3.42 miles, and the Winnipeg Electric Ry. about 8 miles of second track on previously existing lines.

	Miles.	Miles.
Brandon Municipal Ry.—		
Extensions		[illegible]
British Columbia Electric Ry.—		
Various extensions:—		
Vancouver	4.32	
South Vancouver	0.36	
Point Grey	[illegible]	
New Westminster	0.28	
North Vancouver	0.50	
Victoria	[illegible]	
		27.86
Calgary Municipal Ry.—		
Various extensions		17.50
Edmonton Radial Ry.—		
Three extensions		2.40
Guelph Radial Ry.—		
York road to [illegible]		0.60
Halifax Electric Tramway.—		
One extension		0.80
International Transit Co.—		
Extension in Steelton, Ont		0.31
Lethbridge Municipal Ry.—		
Lines in city		10.50
Levis County Ry.—		
St Romauld to Garneau's Bridge, Que		1.50
Moncton Tramways Electricity and Gas Co.—		
Three lines in Moncton, N.B.		0.74
Niagara, Welland and Lake Erie Ry.—		
Line in Welland, Ont		1.00
Nipissing Central Ry.—		
Haileybury, Ont., to spur line	1.32	
Liskeard, Ont., to Wabis River	1.61	
		2.93
Oshawa Ry.—		
Line to brick yard, Oshawa, Ont.		1.50
Peterborough Radial Ry.—		
Extensions		0.75
Saskatoon Municipal Ry.—		
New lines		10.50
Toronto Eastern Ry.—		
Bowmanville, Ont		0.36
Toronto Civic Lines—		
St Clair Ave Line	3.20	
Gerrard St Line	1.85	
Danforth Ave Line	1.12	
		6.17
Western Canada Power Line—		
Ruskin to Stave Falls, B.C		6.00
Winnipeg Electric Ry.—		
Various extensions		8.47
Winnipeg, Selkirk and Lake Winnipeg Ry		[illegible]
Total		106.56

Changes in International Ry.—The reorganization of the International Ry. Co., of Buffalo, N.Y., has been effected, the company having filed a mortgage of $60,000,000 given to the Bankers' Trust Company, of New York. Bonds to the amount of $8,176,000 will be issued to take up outstanding notes and other obligations of the International Ry. Co. and the Crosstown St. Ry. Co., which are merged in the reorganization. T. Penney, who has been president of the I.R. Co. for the past four years, has resigned, in order to attend to his own commercial interests, but remains a director. T. E. Millen continues as Chairman of the Board of Directors.

London Street Ry.—Gross earnings for Nov., $25,442.84; expenses, $18,371.43; net earnings, $7,071.41; deductions, $2,371.25; net income, $4,700.16. Aggregate gross earnings for 12 months ended Nov. 30, $278,217.98; expenses, $192,203.29; net earnings, $86,014.59; deductions, $26,461; net income, $59,553.69.

Montreal Tramway Co's. Betterments and New Rolling Stock.

In answer to press criticisms that the Montreal Tramways Co. is not spending the money it should on track improvements and in providing new cars, the following figures have been given out.

The Montreal St. Ry. and its subsidiaries made the following expenditures for new equipment, betterments, etc.: 1908, $842,884.60; 1909, $729,368.36; 1910, $755,950.51; 1911, $871,193.04. The Montreal Tramways Co., in the 11 months to Nov. 30, 1912, spent $1,238,240.38 for similar purposes.

New cars have been put in service as follows:—

	No.	Seating capacity.
1908	19	836
1909	nil	
1910	18	720
1911	41	[illegible]
1912-13	99	[illegible]

Cars have been scrapped as follows.

	Summer.		Winter.	
	No.	Seats.	No.	Seats.
1908	2	90	2	48
1909	3	135	8	192
1910	15	675	16	384
1911	7	315	11	264
1912	26	1,170	25	600
	53	2,385	62	1,488

In reference to these figures the company's statement says:—The cars scrapped were 53 summer cars with seating capacity of 2,385, and 62 winter cars with seating capacity of 1,488. As the summer cars never ran in winter and the winter cars never ran in summer, for the purpose of comparison with the statement showing cars put in service, the total number of cars scrapped, namely, 115, and the seating capacity of 3,873, should be divided in half, as that shows the net reduction in carrying capacity in cars scrapped for the period covered by statement. In other words the net result would be as follows:

	Cars.	Seating capacity.
New cars added since Jan. 1, 1911	140	5,667
Cars scrapped since Jan. 1, 1911	34½	1,175
Balance added in two years	105½	4,492
Average per year	52¾	2,246
New cars added in five years	177	7,223
Scrapped during same period	57½	1,937
Balance added	119½	5,286
Average per year	24	1,057

The company has on order 210 cars of the latest p.a.y.e. type, with a seating capacity of 40 per car, or a total seating capacity of 8,400. These cars, some of which are being delivered weekly, will afford 35% additional seating capacity, while Montreal's population is only growing at the rate of 10 or 15% a year.

Electric Railway Finance, Meetings, Etc.

British Columbia Electric Ry.—Gross earnings for Nov., 1912, $591,127; operating expenses, $371,051; net operating earnings, $220,076; renewal funds, $51,620; net earnings, $168,456; approximate income from investments, $35,000; net income, $203,456, against $488,699 gross earnings; $302,489 operating expenses; $186,210 net operating earnings; $37,935 renewal funds; $148,275 net earnings; $25,000 approximate income from investments; $173,275 net income for Nov., 1911. Aggregate gross earnings for five months ended Nov. 30, 1912, $2,822,812; net earnings, $982,461, against $2,278,391 aggregate gross earnings; $788,417 net earnings for same period, 1911.

Calgary Municipal Ry.—Gross earnings for October, $54,618.15; operating expenses, [illegible]; net operating earnings, $19,221.48; contingency, interest, etc., [illegible] net profit, [illegible] against [illegible] gross earnings; $18,[illegible] operating expenses; $17,[illegible] net operating earnings; $7,042.9[illegible] contingent, interest, etc.; $[illegible],521.62 net profit for Oct., 1911. Passengers carried, [illegible] against [illegible] in 1911.

Gross earnings for November, [illegible]; operating expenses, $37,802.09; net operating earnings, $17,431.25; contingent, sinking fund, etc., $9,975.14; net profit, $7,456.11, against $35,422.85 gross earnings; $21,401.15 operating expenses; $14,021.70 net operating earnings; $7,034.47 contingent, sinking fund, etc.; $6,987.23 net profit for Nov., 1911. Passengers carried, 1,339,428, against 853,144 in Nov., 1911.

Cape Breton Electric Co.—Gross earnings for October, $31,133.27; operating expenses and taxes, $16,339.61; net earnings, $14,793.66; interest charges, $4,412.50; balance, $10,381.16; sinking and improvement funds, $1,206.67; net balance for reserves, etc., $9,174.49; for Nov., gross earnings, $34,562.72; operating expenses and taxes, $15,809.76; net earnings, $18,752.96; interest charges, $4,475; balance, $14,277.96; sinking and improvement funds, $1,206.67; balance for reserves, etc., $13,071.29. The construction charges for 12 months ended Nov. 30, 1912, were $26,605.85.

Saskatoon Municipal Ry.—The report for the first week of operation of the electric railway in Saskatoon, Sask., shows that 37,543 passengers were carried. The total revenue was $1,877.15.

Toronto Ry., Toronto and York Radial Ry., and allied companies. Gross earnings for Nov., 1912, $742,156; operating expenses, maintenance, etc., $358,371; net earnings, $383,785, against $676,791 gross earnings; $507,252 operating expenses, Maintenance, etc.; $369,539 net earnings, for Nov., 1911. Aggregate gross earnings for 11 months ended Nov. 30, 1912, $7,717,303; net earnings, $3,951,504, against $6,888,788 aggregate gross earnings; $3,624,013 net earnings, for same period, 1911.

The gross receipts from passengers for 1912 are given in press reports as $5,373,784, an increase of $572,556 over 1911, the approximate number of passengers carried during the year being given as 132,000,000, compared with 120,997,844 in 1911. The percentage of earnings paid to the city during the year was $798,958.56, against $687,650, for 1911. In addition to the percentage on earnings, $90,950.40 was paid to the city for mileage, thus making $889,908.96 paid to the city during the year.

Winnipeg Electric Ry.—Gross earnings for Nov., 1912, $345,091; operating expenses, $181,051; net earnings, $164,000, against $355,825 gross earnings; $181,446 operating expenses; $174,379 net earnings, for Nov., 1911. Aggregate gross earnings for 11 months ended Nov. 30, 1912, $3,403,683; net earnings, $1,595,755, against $3,500,848 aggregate gross earnings; $1,778,002 net earnings, for same period, 1911.

Toronto and York Radial Railway.—In the two cases of Waddington vs. Toronto and York Radial Ry. Co. the town of North Toronto and the city of Toronto appealed recently from paragraphs one and two of the Ontario Railway and Municipal Board's order of Oct. 2, 1912, declaring that the railway company has the right under the agreement of April 6, 1894, between the county of York and the Metropolitan Ry. Co. to put in and maintain such switches and turnouts as may be necessary for operating the line, and that the Ontario Railway and Municipal Board has the right to make such an order. The Court of Appeal gave judgment Jan. 15, dismissing the appeal.

Electric Railway Projects, Construction, Betterments, Etc.

Brandon Municipal Ry.—The city engineer of Brandon, Man., reported, Jan. 2, that track had been laid on 7.2 miles of the civic railway. (Dec., 1912, pg. 622.)

The city council has entered into a contract with the Brandon Electric Light Co. for the supply of power to operate the municipal electric railway now being built.

Brandon Radial Ry.—Application is being made by the Brandon City Council to the Manitoba Legislature for authority to build a system of electric railways radiating from Brandon.

British Columbia Electric Ry.—We are officially advised that the company has under construction extensions of its lines on the mainland as follows: In South Vancouver, 1.34 miles; in Point Grey, 3.35 miles.

Plans have been submitted to the New Westminster City Council showing the lay out of the proposed new yard in the west end, between Fourth and Fifth Avenues and Fourteenth and Fifteenth Streets. The estimated cost is $200,000.

Judgment was given in the British Columbia High Court, Jan. 4, in favor of the B.C.E.R. Co., in the action in which the Burnaby Municipality sought to annul a 40 year franchise under which the Vancouver, Fraser Valley and Southern Ry. (a subsidiary of the B.C.E. Ry.) was built. The municipality will appeal. (Jan., pg. 39.)

Calgary Municipal Ry.—Tenders are being asked, we are officially advised, for the supply of materials for the building and equipment of 10 miles of new track and seven miles of second track on existing lines during the current year. Private interests are offering the council 10 miles of fully equipped line as a gift, with a guarantee of operating expenses for five years. When these lines are completed there will be a total of 85 miles of electric railway operated by the city. T. H. McCauley is Superintendent. (Jan., pg 39.)

Cape Breton Electric Co.—We are officially advised that the company has in contemplation the building of the following additional lines:—From Sydney to New Waterford, N.S., via Grand Lake, 8 miles; from Sydney to New Waterford, via Low Point, 14 miles; from Dominion to New Waterford, via Lurgan Beach, 5 miles. E. L. Milliken, Sydney, N.S., is Manager. (April, 1912, pg. 196.)

Fort Garry, Man.—R. A. C. Manning, Reeve of Fort Garry Municipality, Man., recently said that the whole question of the building of an electric railway by the municipality will be considered at an early meeting of the council. The project has been under consideration by the council's officials for some time, and the Manitoba Legislature will be asked to pass the necessary act. A spur track, connecting with the Canadian Northern Ry., has been built to facilitate the getting in of material for this and other civic works. (Jan., pg. 39.)

Grand Valley Ry.—A contract is reported to have been entered into by the Receiver for the company, which is in liquidation, for the supply of Niagara Hydro electric power from the City of Galt, Ont., for the operation of the Paris-Galt section of the line. (Jan., pg. 39.)

Halifax Electric Tramway Co.—The Halifax, N.S., City Council is being urged by local interests to take the necessary steps to obtain power to take over the property and rights of the H.E.T. Co. (Dec., 1912, pg. 622.)

Halifax Electric Tramway Co.—We are officially advised that the construction programme for the current year includes the laying of about a mile of single track. J. W. Crosby, Halifax, N.S., is Manager. (Dec., 1912, pg. 622.)

Hull Electric Ry.—We are officially advised that the company is building by its own staff an extension of 0.72 of a mile to the Connaught Park Jockey Club, Hull, Que. G. G. Gale, Hull, Que., is General Superintendent. (Jan., pg. 39.)

Hydro Electric Commission's Projected Electric Railway.—Press reports from St. Thomas, Ont., state than an engineering party in the employ of the Ontario Hydro Electric Commission started work, Jan. 2, near that city on a survey for an electric railway to Windsor, Ont. The line will, it is stated, run went to Dutton, West Lorne, Rodney, Ridgetown, Chatham and Kingsville, and on to the Detroit River.

Humber Valley Electric Ry.—When the act incorporating this company was passed, a section was inserted providing that it should not come into effect if the City of Toronto should file plans for the building of an electric line on the proposed Humber Boulevard, or should have obtained the consent of the taxpayers to the raising of money for the building of such a line by Jan. 14, 1913. The city having failed to do anything in the matter, the company has filed its plans with the Ontario Railway and Municipal Board, and is arranging to start construction immediately after the plans are approved. The route of the projected line is from Dundas street, near Islington, Ont., along the Humber river valley to the Lake Shore road, and then to Sunnyside, either by running rights over the Toronto and York Radial Ry. R. Home Smith, Toronto, is the principal man in the project. (June, 1912, pg. 308.)

The Lacombe and Blindman Valley Electric Ry. Co. proposes to build a line from Lacombe to Gull Lake, Alta., 10 miles, and thence to Rimbey, a total distance of 30 miles. Press reports state that some capital has been subscribed locally, and that it is expected to start construction early in the spring. E. R. Strathy, of Winnipeg, and J. C. Gibson, Toronto, are interested in this company, which also owns the charter of the Lacombe, Bullocksville and Alix Electric Ry. (June, 1912, pg. 308.)

Lake Erie and Northern Ry.—A trust deed dated Oct. 1, 1912, made between the company and the Montreal Trust Co., securing an issue of 30 year 5% gold bonds, was on Nov. 29, 1912, deposited with the Secretary of State at Ottawa.

A contract is reported to have been let to P. H. Secord and Sons, Brantford, Ont., for all the concrete work on the line. It is estimated that this work will involve the expenditure of about $150,000.

Moncton Tramways, Electricity and Gas Co.—We are officially advised that the company has under consideration the building of an extension of a mile along Church St. to Sunny Brae and another of nearly a mile from the overhead bridge to Main St., Moncton, N.B. H. N. Price, Moncton, N.B., is Superintendent. (Jan., pg. 39.)

Montreal and Southern Counties Ry.—The Board of Railway Commissioners has approved of location plans for the company's line in St. Antoine de Longueuil, Que., to a junction with the Central Vermont Ry., 2.25 miles.

The Montreal Board of Control decided, Jan. 10, to recommend the city council to refuse the company's application to extend the tracks to Youville Square. (Dec., 1912, pg. 622.)

Niagara, Welland and Lake Erie Ry.—We are officially advised that the company has in contemplation the immediate construction of the following lines:—From the G.T.R., Welland, Ont., to Rosedale, one mile, and from the Michigan Central Rd., Welland, to Dainvill's, about two miles. T. F. Swayze, Welland, Ont., is Superintendent. (Nov., 1912, pg. 574.)

The Board of Railway Commissioners has authorized the opening for traffic of the line between the Michigan Central Rd. and the G.T.R. stations in Welland, Ont., 1.52 miles.

Niagara, St. Catharines and Toronto Ry.—Press reports state that plans have been prepared for a new power house to be built in St. Catharines, Ont., at an early day. E. F. Seixas, St. Catharines, is General Manager. (Jan., pg. 39.)

The Northwestern Electric Ry. Co. has, according to press reports, applied to the Vancouver City Council for a franchise for electric railway lines on certain city streets.

Ontario West Shore Ry.—H. W. Middlemist, Toronto, recently informed the Goderich, Ont., Town Council that his report as to the cost of completing and putting in operation this partially built line would be ready for presentation Jan. 30. (Nov., 1912, pg. 574.)

Ottawa Electric Ry.—We are officially advised that the following extensions are projected:—From Somerset St. to Carling Ave., on Preston St., one mile, and from Wilton Crescent to Sunnyside Ave., on Bank St., one mile. F. D. Burpee, Ottawa, is Superintendent. (Jan., pg. 39.)

Port Arthur and Fort William Electric Ry.—On Jan. 6 the ratepayers of Port Arthur, Ont., voted in favor of the following bylaws:—To extend the electric railway along Algoma Street from Arthur Street to Cameron Street, at a cost of $6,550; to lay heavier steel rails on Cumberland Street from Van Horne Street to Current River, at a cost of $32,400. We were officially advised, Jan. 17, that this work has been completed. (Oct., 1912, pg. 521.)

Portage la Prairie, Man.—In connection with the project under consideration for the building of an electric railway from Winnipeg to Portage la Prairie, Man., a site of 10 acres is reported to have been purchased in the latter city on which to erect car barns, car shops, etc. (See Winnipeg to Portage la Prairie, Jan., pg. 40.)

Prince Albert, Sask.—The Stone and Webster Engineering Co., Boston, Mass., has submitted a proposition to Prince Albert, Sask., for the construction of eight miles of electric railway for $275,000. The company has just completed the building of a line in Saskatoon for the city council, financing construction as well as doing the work.

The city of Prince Albert is developing 15,000 h.p. on the Saskatchewan River, and the council has had under consideration the building of an electric railway as a public utility.

Regina-Moose Jaw Interurban Ry.—The Saskatchewan Legislature has incorporated a company with this title intending to build a railway to be operated by any other motive power than steam from the western limits of Regina to Moose Jaw, Sask. The act provides that while the city of Regina may extend its electric lines outside the city, it may not build a line from Regina to Moose Jaw, and that in the event of the boundaries of Regina or Moose Jaw being extended to bring any part of the railway within them, the cities shall have the right to purchase such portion of the trackage as comes within the limits. The provisional directors are J. Friedman, Saskatoon, Sask.; J. G. Boyd, J. R. Cathcart, Regina.

Saskatoon Municipal Ry.—The municipal street railway was opened for traffic Jan. 1. Cars are being operated over three routes, two cars of the pay-as-you-enter type being on each route. The line was built and financed for the city council by the Stone and Webster Engineering Corporation, Boston, Mass., and is being operated under the charge of Superintendent White. (Jan., pg. 39.)

Ratepayers of the south side, Jan. 11, endorsed a proposal to offer the city $50,000 to build a line east on 8th avenue, from Broadway, Saskatoon, out to Sutherland, Sask. The proposition is to be considered at the February meeting of the Saskatoon city council.

Stratford Ry.—The ratepayers of Stratford, Ont., on Jan. 6, passed by a very large majority a bylaw granting the S. Ry. Co. a 25 year franchise for the construction of an electric railway in the city. While the franchise is granted to the S. Ry. Co. the Canadian Northern Ry., or interests allied with it, are behind the project. Confirmation of the bylaw is being asked from the Ontario Legislature. Work is to be started on the line in July, provided the bylaw is ratified. (Jan., pg. 39.)

Toronto and York Radial Ry.—The Ontario Railway and Municipal Board declined, Dec. 16, to grant an order approving of certain modifications of the plans for the proposed diversion of the Metropolitan Ry. south of St. Clair avenue, Toronto. The Board's engineer will go over the plans, and if he approves of them the company may proceed with construction at its own risk, subject to the judgment of the Court of Appeal on the question of the company's right to make the diversion, which is opposed by the city.

Toronto and York Radial Ry.—The question of the price at which the section of the Lake Shore division of the line, from Sunnyside to the Humber river, is to be taken over by the city of Toronto is under consideration. The Ontario Railway and Municipal Board has directed the engineers representing the two interests to agree upon an inventory of the property to be taken over as far as possible, and to go to the Board on points of difference only.

Toronto Civic Car Lines.—We are officially advised that the City Council is having built a double track electric railway on Danforth Ave., from Leslie St. to Luttrell Ave., 2.35 miles. (Jan., pg. 39.)

Toronto Eastern Ry.—We are officially advised that in addition to the 19 mile section from Bowmanville to Pickering, Ont., under construction (Ewen Mackenzie having the contract), on which 0.36 mile of track has been laid at Bowmanville, the company has under survey an extension from Pickering westerly for a distance of 12 miles. E. W. Oliver, Toronto, is Chief Engineer. (Dec., 1912, pg. 623.)

The Toronto Suburban Ry. is being asked to build about two miles of new track in West Toronto, Ont., now known as Ward 7. It is proposed to build a single track a little on one side of the centre line of the street, so as to permit of the building of a second track when traffic warrants. (Dec., 1912, pg. 623.)

The Vancouver Island Hydro-Electric and Tramway Co. has been incorporated in British Columbia, with offices in Victoria, and an authorized capital of $500,000.

Windsor and Tecumseh Ry.—A franchise for the extension of the line from Tecumseh to Belle River, Ont., about 10 miles, is reported to have been granted to the company, which is a subsidiary of the Sandwich, Windsor and Amherstburg Ry., which in its turn is owned by the Detroit United Ry. It was stated that work on the new line is to be started at once. Jas. Anderson, Windsor, Ont., is General Manager. We are officially advised, Jan. 17, that there is no authority on the company's part for this report. (Mar., 1911, pg. 261.)

Windsor, Essex and Lake Shore Rapid Ry.—We are officially advised that there is no foundation in the daily press report that the company was about to extend its line from Kingsville to London, Ont. (July, 1912, pg. 368.)

Winnipeg Electric Ry.—Application is being made to the Manitoba Legislature to ratify an agreement made between the company and the St. Vital Council, granting a franchise for the building of an electric railway in the municipality. (Jan., pg. 40.)

In a report presented to the Winnipeg City Council, details are given of the extensions projected to the various lines in the city. There are only ten of these in all, and the report adds that the company has advised the city authorities that while all the extensions are planned, it is not likely that all of them will be built this year.

Joseph D. Evans, M.Can.Soc.C.E., who has resigned his position as Chief Engineer and Superintendent of Construction, Montreal Tramways Company.

Sunday Car Operation in Ontario.

The appellate division of the Ontario High Court, on Jan. 14, heard the appeal in the case of Kerley v. London & Lake Erie Ry. and Transportation Co., an appeal by defendants from the judgment of the Chancellor of June 25, 1912, in the action by W. Kerley, of St. Thomas, to recover $1,200 penalties from defendants for running electric cars upon their railway on Sundays, Dec. 11, 18 and 25, 1910. At the trial judgment was given for plaintiff for $1,200 as a penalty and costs of action, $600 of which was to be appropriated by plaintiff and $600 to go to the city of London. Judgment on the appeal was reserved.

The Toronto city council has had under consideration a proposition to engage J. W. Moyes at a fee of $1,000 and expenses to report upon the suburban service on the steam railways.

Personal Paragraphs.

R. H. SPERLING, General Manager British Columbia Electric Ry., returned to Vancouver, Dec. 29, after an extended visit to London, Eng.

N. P. BAKER, heretofore Superintendent Niagara Division International Railway, Niagara Falls, N.Y., has been appointed Treasurer of the company, at Buffalo, N.Y., a position he occupied once before.

E. M. HANNAFORD, M. Can. Soc. C.E., Assistant Chief Engineer, Montreal Tramways Co., is at present in charge of the engineering and construction department, consequent on the resignation of J. D. Evans.

A. H. DION, Superintendent, Moose Jaw Electric Ry., was married at Listowel, Ont., Jan. 16, to Miss R. Livingston. Mr. and Mrs. Dion have gone to Europe, expecting to return early in March and take up their residence in Moose Jaw, Sask.

E. A. ROBERT, President; F. H. Wilson, J. W. McConnell, M. Wilson, W. E. Finlay and G. McIntyre, directors of the Montreal Tramways Co., have taken action individually against the Montreal Herald Publishing Co., to recover $100,000 damages in each case, for libel on them in their capacity as directors of the company.

JOS. D. EVANS, M. Can. Soc. C.E., whose portrait appears in this issue, has resigned as Construction Engineer, Montreal Tramways Co., on his appointment as Construction Manager, Electric Bond and Share Co., New York, in charge of plants under construction in Utah and Idaho. He was born at Lowell, Mass., and graduated as a civil engineer from the Massachusetts Institute of Technology, and has been associated with engineering work on the Nicaraguan and Panama canals, and with railway construction in Ecuador, electric railway construction in Pennsylvania, Massachusetts and Connecticut; the Great Northern Power Co.'s plant at Duluth, Minn.; the construction of the Buffalo, Lockport and Rochester Ry. between Rochester and Lockport, N.Y., and the Canada Light and Power Co.'s plant at St. Timothee, Que.

Advance in Wages by Quebec Railway, Light and Power Company.

A board of conciliation was appointed recently to settle differences between the Quebec Ry., Light & Power Co. and its street railway conductors and motormen, which resulted in an agreement between the company and the men by which the wages were advanced 1½c. an hour from Nov. 1, 1912, and an additional 1c. an hour from Nov. 1, 1913. The new scales of wages per hour are as follows:—

	Nov. 1, 1912.	Nov. 1, 1913.
1st year employes	17½ cents	[illegible] cents
2nd year employes	18½ "	[illegible] "
3rd year employes	20½ "	[illegible] "
5th year employes	21½ "	[illegible] "
10th year employes	22½ "	[illegible] "

The company does not recognize the union (National Brotherhood of Street Railway Employes no. 1 of Quebec) but declares that it has no objection to its employes belonging to this union. The company has reinstated two employes who were dismissed on reports which, on enquiry, proved to be erroneous, but which had been accepted in good faith, and distinctly states that the dismissals were not made because the employes were members of a union.

The board of conciliation states that the greatest cordiality prevailed throughout the proceedings between the company's representatives and employes, and that both parties were evidently animated with the desire to adjust their differences amicably.

Electric Railway Notes.

The Hamilton St. Ry. has received 12 single truck cars from the Preston Car and Coach Co.

The Calgary Municipal Ry., Alta., has received 3 pay-as-you-enter cars, with 28 ft. bodies, from the Preston Car and Coach Co.

A vote will be taken in Saskatoon, Sask., Jan. 11 on the question of operating cars on the municipal electric railway on Sundays.

It is reported that during 1912 the British Columbia Electric Ry. carried 10,976,690 passengers, an increase of 2,746,482 over 1911.

The City of Toronto is promoting a bill in the Dominion Parliament to empower the operation of the civic street railway on Sundays.

The Montreal Tramways Co. has ordered 50 car bodies from the Canadian Car and Foundry Co. and has received six from the same company.

The Toronto City Commissioner of Works is negotiating for 20 electric railway cars for the civic lines on St. Clair and Danforth Avenues.

The Ontario Railway Act and the Ontario Railway and Municipal Board Act are to be revised at the Ontario Legislature's ensuing session.

A preliminary report on the electric railway traffic in Winnipeg has been prepared for the Public Utilities Commissioner by R. M. Fenstel, C.E., and was made public, Jan. 8.

The Ontario West Shore Ry. is being sued by the C.P.R. for $6,274, claimed to be due for material, labor and repairs supplied in the construction of a span bridge near Goderich, Ont.

The Mount McKay and Kakabeka Falls Ry. which has hitherto been closed down during the winter, is being operated this winter, mainly for the purpose of carrying sand and gravel for building purposes.

The Calgary, Alta., City Council is considering the question of adopting trackless trolley cars or motor busses in the residential districts where tracks are objectionable, as an adjunct to the municipal electric railway system.

The Board of Railway Commissioners has approved the Niagara, Welland and Lake Erie Ry. standard passenger tariff [illegible] railway.

The London St. Ry. recently complained to the City Council that its service is frequently blocked at crossings by G.T.R. [illegible] Ont., Jan. 16, at the instance of local citizens.

[illegible] pany was willing to enter into an entirely new contract.

The city of Calgary, Alta., has under consideration the adoption of a few trackless trolley cars, or motor busses, in the residential district, where there is objection to the use of tracks. We are officially advised [illegible]

[illegible] ended, pay-as-you-enter type, turtle back [illegible] from the Preston Car and Coach Co. Three of these cars will be equipped with Allis-Chalmers-Bullock 301 motors, ten with Canadian General Electric 80 motors, and 22 with Westinghouse 101 B2 motors.

The Montreal Tramways Co., in publishing a number of statistics relating to its development during 1912, states that $1,238,240 was spent in new equipment and improvements during 11 months of the year, against $871,193 for the whole of 1911. Since Jan. 1, 1911, the company has added 140 cars to its rolling stock, and has scrapped 34 cars. It has now 210 pay-as-you-enter cars in operation.

H. A. Robson, Manitoba Public Utilities Commissioner, issued an award Jan. 9, as to the terms of an agreement to be entered into between the Winnipeg Electric Ry. and the Winnipeg City Council for the joint use of poles in the city for the distribution of electrical energy. Arbitrators were appointed in July, 1912, but these failed to agree, and the matter was finally referred for settlement to the Commissioner.

The Montreal Tramways Co. was recently called upon by the Quebec Public Utilities Commission to submit reports and books as to traffic, etc., in order that the commission might decide upon the application of the City Council for an order directing the company to improve its service. The company filed a declinatory exception to the jurisdiction of the commission Jan. 9, and the matter was argued Jan. 17, judgment being reserved.

The city of Brandon, Man., has ordered for its municipal railway, from the Niles Car and Manufacturing Co., 10 cars, 34 ft. long over all, 21 ft. bodies, mounted on 21E trucks, full arch type roof equipped with electric ventilation, forced ventilation hot air heating, all steel underframes, and sheathed with steel and double wires. Five of these cars will be equipped with Westinghouse 101B motors, and five with General Electric 80A motors. The price of the cars is reported as $2,165 each.

The new regulations as to traffic on the street railways in British Columbia, issued by the Provincial Government are being put in force, by the British Columbia Electric Ry. The regulations provide that cars shall only carry a certain number of passengers, that when full they shall not stop except to let passengers off, and that only such number of new passengers can be taken on as have got off, that riding on the steps, etc., is forbidden, and that gates shall be provided on the platforms of all cars.

The Fort William city council recently passed a resolution urging the joint railway board operating the Port Arthur and Fort William Electric Ry. to establish a five minutes service between the two cities, but it is announced that at present the board is unable to give such service on account of lack of cars and power. Cars have been ordered, and a part of the extra power required will be available about April 1, but it is not anticipated that a five minutes service will be commenced until about July 1. The cars are now run between the two cities at intervals of 10 minutes.

Actions have been entered in the Supreme Court at Montreal by E. A. Robert, President; F. H. Wilson, J. W. McConnell, M. Wilson, W. C. Finlay and G. McIntosh, directors of the Montreal Tramways Co., against the Montreal Herald for libel in connection with comments in that paper on the affairs of the company, which, it is alleged, reflect on the directors. The Herald has for some time carried on a campaign against the company's service, and [illegible] of the proceeds of various stock issues, and the obtaining of increased legislative privileges by false pretences. Each of those taking action claims $100,000 as damages.

Mayor Hocken, in his recent inaugural address to the Toronto City Council, expressed his satisfaction at the successful operation of the Gerrard St. car line and the hope that it would form the nucleus of a complete system of public owned and operated street and radial railways. He stated that work was proceeding on the St. Clair and Danforth Ave. lines and that they might be in operation by July 1. He deplored the successful effort of the Toronto Suburban Railway Company for the construction of a single track line on Annette St. and Pacific Ave. and pointed out that it now rested with the city to build a line to serve the High Park district. The effort of the Metropolitan Ry. Co. to divert its line on Yonge St. was also commented upon and vigorous opposition was urged. He contended that 35% of the Toronto Ry. Co.'s tracks should be rebuilt, according to additional information given out in connection with the report of the traffic experts.

Automobiles to Stop When Electric Cars Are Standing.

An enquiry has been received from British Columbia as to the regulations in force requiring automobiles not to pass electric cars which are stopped to embark or disembark passengers.

The Motor Vehicles Act, Ontario Statutes, 1912, chap. 48, sec. 15, provides as follows:—"When a motor vehicle meets or overtakes a street car which is stationary, for the purpose of taking on or discharging passengers, the motor vehicle shall not pass the car on the side on which passengers get on or off, until the car has started, and any passengers who have alighted shall have gotten safely to the side of the street."

The Motor Vehicles Act, sec. 54, as amended by Manitoba Statutes, 1911, chap. 28, sec. 14, provides as follows: "In approaching or passing a car of a street railway which has stopped or is about to stop to allow passengers to get on or off, the operator of every motor vehicle shall low down, and, if necessary, he shall bring said motor vehicle to a stop and not proceed until the car has started and all passengers who have alighted shall have gotten safely clear of the motor vehicle."

As the question has been dealt with by the Ontario Legislature, apparently nearly all of the municipalities in that province have not thought it necessary also to pass bylaws on the subject, but the City of St. Catharines has a bylaw worded almost identically with the Ontario statutory provision given above. The City of London, Ont., has a bylaw requiring all vehicles to come to a full stop, rather than overtake and pass an electric railway car which has stopped for the reception or discharge of passengers.

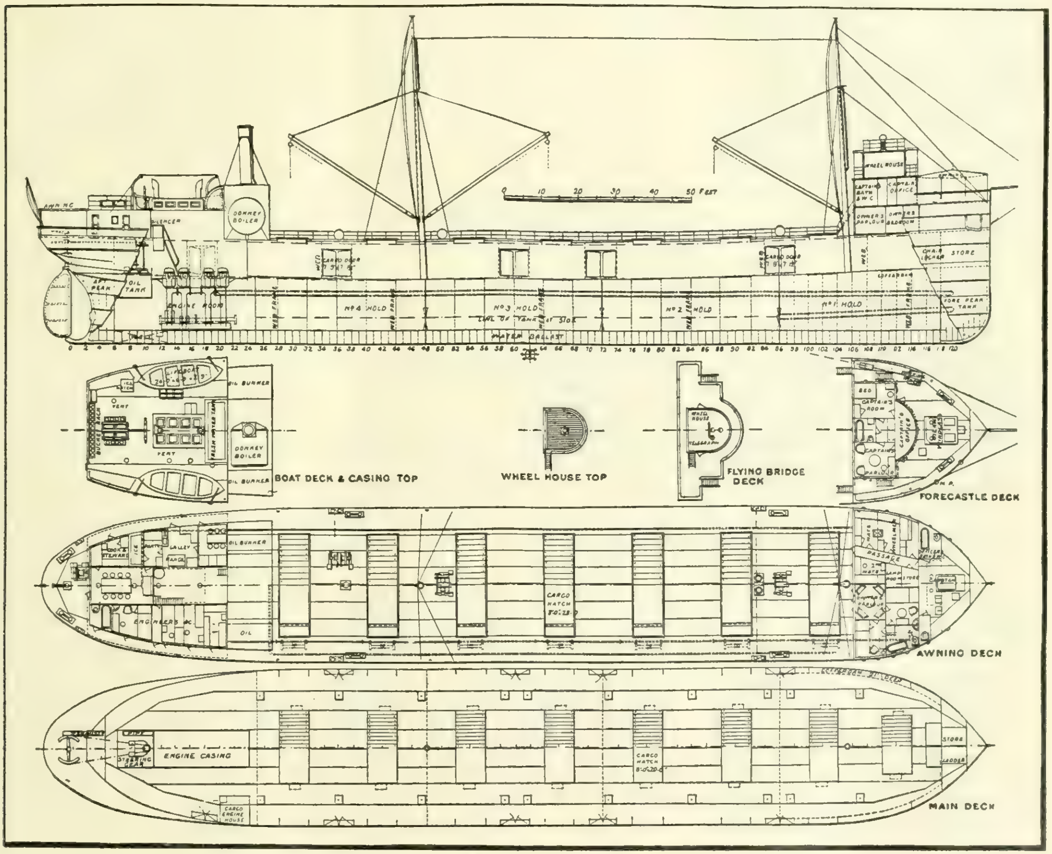
The Toronto City Board of Control had under discussion recently the passing of a bylaw to compel all vehicles to stop for electric cars embarking or discharging passengers, and the matter was referred to the City Solicitor for report.

The City of Montreal in its bylaw concerning street traffic, provides as follows:—"Every driver of a vehicle going in the same direction as a street car shall, when such car stops, also stop his vehicle at a distance of at least 10 ft. from said car, and shall keep such vehicle at a standstill until the said car has been again set in motion."

Steps are being taken to secure the passage by the Saskatchewan Legislature of provisions similar to those enacted by the Ontario and Manitoba Legislatures.

Marine Department.

The Oil Engined Vessel Fordonian.



Profile and Deck Plans of Oil Engined Vessel Fordonian, for the Canadian Lake Trade.

The trials of the Canadian lake type ship Fordonian, which was built at Port Glasgow, Scotland, for the Canada Interlake Line Ltd., of Toronto, have been described in a previous issue. Drawings of this ship and her Diesel machinery are given herewith. The Fordonian has the following leading dimensions:—250 ft. long, 42½ ft. beam, 16 ft. 10. in. moulded depth to the main deck, and 26½ ft. to the awning deck. She has a 2 ft. frame pitch, and a deadweight cargo carrying capacity of 3,300 tons on 16½ ft. draught. The draught on service is restricted to 14 ft., and the deadweight capacity is thus reduced to 2,200 tons. She is built to Lloyd's highest class for grain carrying on the Great Lakes, and conforms to the standards of Canadian lake practice in that she has a steering pole out forward to make quite handy the control from the forward bridge, a large number of hatches, and inward opening cargo doors on the port and starboard sides to facilitate the rapid removal of cargo. The cofferdam at the forward end of the fore hold is unusual in such vessels, and is intended to preserve the cargo from damage should the ship spring a leak as a result of coming in contact with any one of the many locks through which she passes in her regular trading. There are two independent controls from the bridge to the engine room telegraph, and the steam steering engine is operated by rods from the bridge. As with the sister ships, D. A. Gordon and A. E. McKinstry, there are two masts with derricks on each, and the chart house and navigating bridge are situated right forward. The rudder is balanced and is of large area. In the trials the vessel turned almost in her own length, and when the helm was put hard over she almost came to a dead stop.

The propeller is 11 ft. 9 in. in diameter by 9 ft. pitch.

The main propelling engine is a four-cylinder two-stroke cycle single acting Carels type of Diesel oil engine. The cylinders are 18.1 in. diameter by 32.25 in. stroke, and the engine runs normally at about 100 revolutions per minute. In the main features of the structure steam engine marine practice has been closely followed. The columns of the engine are of the box section, bolted rigidly together at the top, and are very thick, to withstand the tension stresses consequent upon the high pressures of the Diesel cycle. The cylinders have separate liners pressed in, and the liners have exhaust ports round the whole of their periphery, and communicate with an exhaust belt of large cross sectional area, running round the cylinder. The water spaces are large and ribs are cast on the inside of the cylinder to aid water circulation and to give to the cylinder wall strength to resist the direct pull passing through it. On each cylinder there are six bolted doors, of about 9 in. diameter, permitting of ready inspection and cleaning of the water cooling space. At the bottom of the cylinder there is a lantern ring, which serves to keep the joint between the cylinder and liner water tight, and, [illegible], to prevent the escape of cylinder gases into the engine room. Any leakage of gases goes into an annular chamber, which is connected to the scavenging pump suction, and is thus kept at a pressure below that of the atmosphere. The cylinder head is of cast steel, and has large cooling water spaces, with seven valve openings; one fuel, four scavenging, one starting air, and one safety. The piston of the Carels engine is in two pieces. The top piece is carried by a shoulder on the piston rod, and the bottom piece, or shroud, is carried at its bottom by another shoulder on the piston rod. Water cooling is adopted for the piston, and the water is circulated by the action of the plungers. The arrangement of the engine into two units of two cylinders each permits of a two piece crank shaft in interchangeable halves, of the vertical spiral drive for the valve gear being taken from the centre of the engine, and also of the scavenging pumps being driven from the two centre crossheads by links, as with the air pump of steam engines. The dimensions of the double acting scavenging air pumps are 27½ in. in diameter with a 23½ in. stroke, and give thus a ratio of free air compressed for scavenging to combustion air taken into the main cylinders of 1.65, which is higher than the usual practice. The pressure of the scavenging air is 3 lb. per sq. in. There are four valves in the cylinder head for the inlet of the scavenging air to cope with the large volume of low pressure air used in the engine. The scavenging pumps are controlled by two piston valves worked by slipping eccentrics driven from the aft part of the two piece interchangeable built up crank shaft, and the change of angular positon permitted by the slipping of the eccentric on the crank shaft automatically reverses the scavenging pump piston valves. The scavenging air is led by cast iron pipes from the valves to a built up 3-16 in. lap riveted steel plate reservoir running along the cylinder top and supplying the four scavenging valves on each cylinder. The exhaust is led down by bent cast iron pipes from the cylinders bent to the main exhaust pipe running along the engine to the cast iron silencer. These bends have internal water injection, and the silencer is also internally water cooled and is of the cascade design. The exhaust is led overboard under the counter. The funnel is for the uptakes from the donkey boiler. Separate leads are provided from the main sea water pumps worked off the links driving the scavenging pumps, and cocks are provided on all these leads to regulate independently the amount of cooling water supplied to each part. The temperature of this cooling water may be felt, as there are open discharges into funnels leading to the bilges. As regards lubrication, for the main bearings solidified oil is used, for the crank pin bearings the ordinary drip feed suffices, and the bearing pressures for the main and crank pin bearings are respectively about 300 and 650 lbs. per sq. in. For the lubrication of the cross head bearing, a small lubricating oil forcing pump is attached to each cross head, and worked by the swing of each connecting rod. This system of lubrication permits of an open crank case, and the bottom end bearings can always be easily felt by the engineer on watch. There are two guides for each. The piston is lubricated by four Mollerup lubricators, which force the oil between the piston and the cylinder; there are four inlets to the cylinder, and they are arranged to enter on the fore and aft and athwartship centre lines. There are seven valves and an indicator cock in the cylinder covers. These valves are operated in the usual way by cams and cam levers. The cam shaft is driven from the crank shaft by helical gearing through a vertical shaft, with cast iron helical wheels and pinions. For the reversing mechanism and its operation, there are two scavenging cams operating four scavenging valves, and these are reversed by turning the cam shaft through approximately 30 deg. by extending the driving vertical shaft by means of a compressed air servo-motor. The fuel pumps, of which there are four—one for each cylinder—are operated by eccentrics from the cam shaft. The control of the engine is by means of one wheel and two levers on the starting platform; one lever controls the compressed air engine, which gives the cam shaft its angular displacement by raising or lowering the vertical driving shaft, and also gives the manoeuvring shaft its fore and aft movement. The other lever controls the fuel. A wheel, operated by hand, gives the manoeuvring shaft its rotary motion. The cams upon the manoeuvring shaft act upon the suction valves of the fuel oil pump. Hand control is also provided by the handle on the column, which actuates a shaft running fore and aft on the engine, and so sets all the fuel pump suction valves. Although compressed air is used for actuating the vertical shaft, causing the angular rotation of the cam shaft and the rotation and displacement of the manoeuvring shaft, hand gear in emergency may be used. This vessel in her regular route trip from Montreal to Port Arthur must pass, each trip, through some 30 to 40 locks, and this demands manoeuvring qualities far above the average, and that the engines must be capable of being stopped, started and reversed in a very short time. Stopping from full speed ahead was on trial accomplished in two or three revolutions of the main engines, and reversals from full ahead to astern took six seconds. A trial of manoeuvring was then made, and reversals were carried out from the bridge to correspond with the actual conditions in service of this vessel; 63 reversals were accomplished in 42 minutes, with more than half of the high pressure compressed air still unused. The auxiliary steam driven compressor was, of course, in use for this trial. The system of having one fuel pump for each cylinder makes for easy regulation of the quantities of fuel oils supplied, and so permits of a very slow speed of revolution. On the trial trip 46 revolutions a minute was the minimum attained; but when the final tuning up has been accomplished, and all cylinders at all speeds are developing exactly the same power, a minimum speed of revolution of about 35 revolutions will no doubt be achieved. No governor is fitted, as rough weather is not normally encountered, and the heavy fly wheel, some 9 ft. in diameter and about 7 tons in weight, is relied upon. The compressed air for the injection of the fuel oil into the working cylinders, and also for the starting of the engine, is supplied by a reversible three stage compressor. The compressor is an integral part of the Diesel engine, and as such is driven from the main engine. The compressor is bolted on to the bed plate at the forward end, and is driven by a pin off the crank shaft. The stroke is 8 in. (7¾ in. net), allowing for the ¼ in. auxiliary ports; and the diameters are:—Two low pressure cylinders, 15 in.; one intermediate cylinder, 9½ in.; and one high pressure, 4¾ in. The volume of free air per minute dealt with by this compressor is 6,200 litres, and it was noted on trial that the air was supplied cool. This compressor has multitubular intercoolers. The cooling water and bilge pumps are driven off the scavenging air pump links in the same way that these pumps are driven off the links of the air pump with mercantile steam engines. The cooling water from the cylinders and cylinder covers is led to a trough placed high up in the engine room, at which trough all discharges are visible. From there the water goes overboard. The auxiliaries are steam driven from a cylindrical donkey boiler, situated aft on the awning deck in the fore part of the engine casing. The boiler uses exactly the same kind of fuel as the main engines. The auxiliaries are:—the dynamo, auxiliary compressor, ballast pump, oil fuel pumps, three winches, a windlass, and steering gear. The auxiliary steam driven compressor is of half the capacity of the main compressor, and runs normally at 300 revolutions a minute. Air storage for starting purposes is provided by four welded steel bottles, of 23⅝ ins. diameter by 8 ft. long, and that for trial fuel injection by one bottle, 1 ft. in diameter by 3 ft. long. The pressure of the fuel injection air and the starting air is 850 lb. per sq. in. The time taken by the auxiliary compressor to fill up the air storage provided is about one hour. The remainder of the auxiliaries are similar to steam practice. The weight of the main engine alone is about 100 tons, and if the auxiliaries are included, all ready for work, 150 tons is the weight of machinery aboard. There is fuel storage in two oil tanks placed on both sides of the oil fired donkey boiler, and two ready use tanks are placed aft of the engine room, and are provided

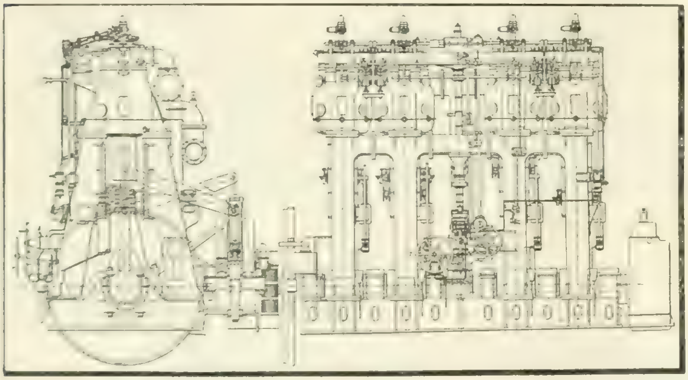


Diagram of Engines on Oil Engined Vessel Fordonian.

with steam heating coils, while the oil is filtered, on its way to the fuel pumps of the main engines, through 15 gallon filters in the engine room. In all 105 tons of oil fuel is carried, whereas with the sister steamships 250 tons of coal is required. The consumption per day for all purposes is 5 tons of oil fuel, against 14 tons of coal. The fuel consumption of this engine is 0.47 lb. per brake horse power per hour. On the trials, it was shown that the indicated horsepower at 102 revolutions per minute and 90 lb. per sq. in. is 970; 10 knots were achieved with the engines doing 128 revolutions per minute. The maximum revolutions were 140, the normal about 102, and the minimum 46. The results will undoubtedly be improved upon when the engines are finally tuned up, as prior to the trial trip they had only been run in dock trials for twelve hours in all. The general arrangement of the engines and auxiliaries is well thought out to give the greatest possible immunity from breakdown. This type of engine seems quite suited to the propulsion of cargo boats, and the saving in space consequent upon the adoption of the Diesel engine for this ship is five frame spaces, aggregating 10 ft., or about 33% of the machinery space.—Shipping Illustrated.

The Dominion Wreck Commissioner's Judgments Criticized.

Considerable comment is being made in Canadian and British newspapers respecting recent judgments by the Dominion Wreck Commissioner in regard to enquiries into marine casualties, and especially regarding a recent stranding on the St. Lawrence route.

The Journal of Commerce, Liverpool, Eng., says:—"A correspondent points out that much indignation has been aroused among navigators in the St. Lawrence trade by the extraordinary decisions and gross injustices of the Canadian Wreck Commissioners' Court in some recent cases of shipping casualties in the St. Lawrence. As these cases may be the subject of reinvestigation it would be wise to suspend comment, but nautical men consider that it is futile for the Canadian authorities to try to cover up the defects of their pilotage system and the lighting and marking of the river by making an onslaught upon the certificates of masters and officers."

Amongst some of the comments made, questions are raised as to the jurisdiction of the Dominion Wreck Commissioner, but there appears to be no doubt on that point. Sec. 21, chap. 35, 1 Ed. VII. (Shipping Casualties Act), provides that the certificate of a master, mate, or engineer may be cancelled or suspended by a court holding a formal investigation under the act, if the court finds that the loss or abandonment of, or damage to, a vessel has been caused by his wrongful act or default.

The question of what constitutes a wrongful act, or default, is clearly laid down in this and other acts, but an incorrect impression has seemed to prevail for some time as to the necessity for the presence of the master, or a competent officer, on the bridge when a licensed pilot is on board. The Dominion Wreck Commissioner has laid particular stress on this point during many of the recent investigations, and has commented very strongly on the growing practice of masters leaving the bridge as soon as the pilot takes charge. It is declared in sec. 57, chap. 80, R.S.C. (Pilotage Act), that "nothing in this act shall exempt any owner or master of any ship from liability for any loss or damage occasioned by his ship to any person or property, on the ground either of such ship being in the charge of a licensed pilot, or of such loss or damage being occasioned by the act or default of a licensed pilot, or any other ground." It would therefore appear that the master is not relieved of responsibility when a pilot takes charge, and in case of accident to the vessel, the question of the act or default of the master, as well as of the pilot, would come within the purview of those holding the enquiry into the casualty.

Those associated with the navigation interests in Canada hold strong views on this matter, and the rule that the master of a vessel shall be on the bridge the whole time when the vessel is navigating in narrow or dangerous waters is being strictly enforced on freight as well as passenger vessels.

Regarding the remarks made in connection with the pilotage, we have already announced what steps the Shipping Federation of Canada has taken in the matter, and the probability that the Dominion Government will shortly appoint a commission to enquire into pilotage generally, as well as aids to navigation. The statement alleging defects of the lighting and marking of the river, however, is so misleading that we are compelled to repeat what has frequently been stated by competent authorities, that the St. Lawrence ship canal is one of the best lighted and buoyed channels in the world, and is almost as easily navigable by night as by day.

Canada Interlake Line's Bond Issue.

In Canadian Railway and Marine World for January, considerable details were given as to the formation of this company, its vessels and finances. An issue of bonds has now been placed on the market, amounting to $200,000. They are 6% ten year serial gold bonds, dated Jan. 1, 1913, maturing in 10% amounts each year to Jan. 1, 1923, and are subject to redemption before maturity at 105 and accrued interest. They were offered at 98½ and accrued interest. These are the only bonds issued by the Canada Interlake Line, and are secured by first mortgage on the steel steamboats Regina, Kenora and Tagona, built and equipped at a cost of $442,242. The mortgage securing the bonds provides that insurance against all possible hazards to the extent of 125% of the amount of the bonds at any time outstanding shall be maintained continually, and that the policies shall be made payable to the National Trust Co., to protect the bondholders.

The Canadian Interlake Line Ltd. which has been taken over by the Canada Interlake Line Ltd. has outstanding bonds for $520,000 secured on the steamships Acadian, Canadian, A. E. McKinstry, Renvoyle, Indian, Hamiltonian and Calgarian.

The Canada Interlake Line's preferred and common stock have been listed on the Toronto Stock Exchange.

Prevention of Harbor Pollution.

The regulations for the government of public harbors in Canada have been amended by the addition of the following section:—

36a. No oil, tar or other like substance or any inflammable or otherwise dangerous substance shall be thrown or discharged or drained or allowed to fall, flow or leak into the waters of any harbor, and any person violating the provisions of this regulation or any person in charge of or owning any ship, vessel, manufactory, works, house or other premises violating the provisions of this regulation shall be liable to a penalty of $50, and in case of a continuing violation to a further penalty of $10 for every 12 hours during which such violation continues.

St. Lawrence and Chicago Steam Navigation Company, Limited.

The following report was presented at the annual meeting in Toronto, Jan. 17:—

The season of 1912 was a satisfactory one to vessel interests on the lakes. The active demand for coal and ore, coupled with an exceptionally large grain crop in the United States and good crops in Canada, established the highest rates of freight since the autumn of 1905.

Your directors continued the policy of insuring a proportion of the risks on vessels under a modified form of policy, crediting insurance fund with amount of premiums saved. The vessels met with no accidents during the season, and we now have at credit of that fund $109,290.47. It is the intention of your directors to continue this policy until insurance can be obtained at what they may consider reasonable rates and terms.

As the business of the country continues to grow, and it was necessary to secure additional tonnage to take care of the company's business, your directors took advantage of the low price of steel last spring to contract for a large modern, side tank, bulk freight steamer, which is promised to be ready for the opening of navigation, 1913. As our s.s. Algonquin was too small to supplement our larger vessels in upper lake trade, your directors decided to dispose of her, and this leaves our fleet now composed of steamers of modern construction, large carrying capacity, and all maintained in the highest state of efficiency.

The directors from the earnings of the season have paid a dividend of 8%, and, after providing for same and writing off $35,000 from vessels' account, have carried forward $17,169.24 to the credit of profit and loss, making a balance at credit of that account of $158,645.96.

ASSETS.

Four Vessels, viz.: Iroquois, W. D. Matthews, G. R. Crowe and E. B. Osler	$900,000 00
New Vessels, expended to date ...	142,839 60
Bills and accounts receivable	41,910 60
Balance in Dominion Bank	43,278 23
	$1,128,028 43

LIABILITIES.

Capital stock	$860,000 00
Accounts payable	92 00
Insurance fund	109,290 47
Balance of profit and loss	158,645 96
	$1,128,028 43

PROFIT AND LOSS ACCOUNT.

Balance, Jan 2, 1912		$141,476 72
Steamships' earnings ..	$134,031 69	
Interest	2,382 95	
		136,414 64
		$277,891 36
Cost of management, viz.: salaries, taxes, office rent, directors' and auditors' fees, etc		$15,445 40
Written off steamships' account ...		35,000 00
Dividend, 8 per cent., payable Jan. 2, 1913		68,[illegible]
Balance carried forward		158,645 96
		$277,8[illegible]

The directors who were re-elected for the current year are:—President, W. D. Matthews; Vice President and Secretary, J. H. G. Hagarty; Managing Director, A. A. Wright; other directors, Jas. Carruthers, Capt. S. Crangle, G. R. Crowe, C. S. Gzowski and Sir Edmund Osler.

J. and J. T. Mathews, Toronto, have placed on the Canadian register the steamship Masaba, acquired from the U.S. She was built in Chicago, Ill., in 1891, and is screw driven by engine of 156 n.h.p. Her dimensions are:—Length, 240 ft.; breadth, 40 ft.; depth, 25 ft.; tonnage, 1,913 gross, 1,267 register.

The Launching of the Steamship Calgarian.

The Canada Interlake Line's steamship Calgarian was launched at Port Arthur, Dec. 28. She is built of steel on the Isherwood system of longitudinal construction, which, while permitting of a lighter build, gives a greater cargo carrying capacity, by at least 5% over that obtained by the ordinary methods. Her dimensions are:—Length, 244 ft. between perpendiculars, and 257 ft. over all; beam, 42½ ft.; depth, moulded, 26½ ft. She is equipped with triple expansion engines with cylinders 18, 29 and 48 ins. diar., by 40 ins. stroke, supplied with steam by two Scotch boilers, 11½ ft. diar. by 11½ ft. long, at a pressure of 180 lbs., steam steering gear, etc.

The vessel has been built as a cargo carrier entirely, and the most up to date appliances have been installed for the expeditious handling of freight. It is anticipated that she will be handed over to the owners early in February.

Vessels Removed From the Register.

The following vessels were removed from the register during December, for the reasons assigned:—Steam,—Aloha, Vancouver, 11 tons, lost; Babine, Vancouver, 16 tons, burnt; Bessie Ardella, St. Andrews, N.B., 12 tons, sold to foreigners; Blandford, Quebec, Que., 27 tons, broken up; Cecilia L, Montreal, 115 tons, foundered. Sailing,—Aaron, Ottawa, 144 tons, broken up; Bessie G., Parrsboro, N.S., 69 tons, wrecked; Black Prince, Yarmouth, N.S.; Calumet, Ottawa, 154 tons, broken up; Clarke, Ottawa, 145 tons, broken up; E. Merriam, Parrsboro, N.S., 331 tons, wrecked; Garnet, Yarmouth, N.S., 27 tons, broken up; Grant, Ottawa, 146 tons, broken up; Grenville, Ottawa, 154 tons, broken up; Hustler, Charlottetown, P.E.I., 13 tons, broken up; Joy Folger, Sydney, N.S., 17 tons, transferred to Newfoundland; Laura, Port Hawkesbury, N.S., 13 tons, broken up; P. Girard, Ottawa, 142 tons, broken up; Phantom, Chatham, N.B., 17 tons, lost; Strathcona, Windsor, N.S., 251 tons, transferred to Bahama Islands.

Aid Asked for Shipbuilding in Canada.

A deputation of shipbuilders from various points of the Dominion waited on the Premier and other members of the Government at Ottawa Jan. 21 to urge the desirability of subsidizing the trade in some way as a protection against outside competition.

The deputation pointed out that some $20,000,000 is invested in the business in Canada, and urged that a subsidy, or tariff equivalent, to the extent of 20% of the cost of building iron and steel vessels should be granted by the Government, in order to prevent the practical disappearance of the trade. It was claimed that with the tariff of 25% for repairs against the U.S., conditions on the Great Lakes still allowed most of the repair business to go to U.S. ports, and against British competition there was no protection, though the cost there on account of lower wages and lower cost of a great part of the raw material was much cheaper. In order to meet competition, a bonus per gross ton and a subsidy on contract cost were suggested as the only means of developing the industry. It was also stated that Canadian shipbuilding companies on the Great Lakes had to confine themselves to the building of such vessels as could not be built in Great Britain and sent through the St. Lawrence canals, and that on a vessel costing $120,000 to build, Canadian companies were taxed about $12,000 in duties on fittings and raw material.

The Premier stated that when in Great Britain last year, he was told that the cost of shipbuilding was steadily increasing there, and he was under the impression that in the course of the next decade or so it might approximate to the Canadian prices. He said that he had never been able to obtain from Canadian shipbuilders a statement as to how long a bounty would have to be paid before the industry could be said to be on a self supporting basis, but he was impressed with the importance of the situation, and with his colleagues would take the matter under serious consideration.

Essential Feature of the Diesel Engine.—In the course of a paper recently read at Berlin, Dr. Diesel denied that the essential feature of the Diesel process was the autoignition of the fuel. He stated that motors in which the autoignition of the fuel took place were in use before the Diesel process came into being; indeed, he had never laid a claim to autoignition in any of his patents. What he was aiming at was a process in which heat was utilized to the highest possible extent, and autoignition became embodied in the process incidentally during the evolution of the design. "The height of compression," said Dr. Diesel, "was not determined by the ignition limits of the fuel, but solely by the endeavor to obtain the highest possible figure for economical fuel utilization."

It is authoritatively stated that the German navy is having a twin screw Diesel marine engine, which will consist of two sets of six cylinder, double acting engines, each set giving 12,000 horse power, or 2,000 h.p. per cylinder.

List of Steam Vessels Registered in Canada during December, 1912.

No.	Name	Port of Registry	When and Where Built		Length	Breadth	Depth	Gross Tons	Reg. Tons	Engines, Etc.	Owner or Managing Owner
[illegible]	[illegible]	[illegible]	1912	Penetanguishene, Ont.	[illegible]	10 2	5 6	22	15	7 n.h.p. sc	P. Dupuis, Penetanguishene, Ont.
[illegible]	Casarco No. 8	St. Andrews, N.B.	1912	Comeauville, N.S.	[illegible]	12 6	5 7	16	11	1¾ " "	Canadian Sardine Co., St. Andrews, N.B.
133781	Casarco No. 9		[illegible]		[illegible]	12 6	5 7	16	11	1¾ " "	" " " "
[illegible]	Evangeline	[illegible] N.S.	1912	[illegible], Scotland	[illegible]	46 0	[illegible]	[illegible]	[illegible]	[illegible] " "	Can. Atlantic & Plant Steamship Co., Halifax, N.S.
x133716	G. R. Hughes	Vancouver, B.C.	1912	[illegible]	65 4	15 7	7 0	42	[illegible]	[illegible] " sc	S. Cullington, et al., Vancouver, B.C.
[illegible]	[illegible]	[illegible] Que.	[illegible]	[illegible] Que.	[illegible]	11 5	[illegible]	[illegible]	14	[illegible] " "	J. Ferguson & Co., St. Marie de Sayabec, Que.
131052	Hamiltonian	Port Arthur, Ont.	1912	Port Arthur, Ont.	[illegible]	[illegible]	23 4	[illegible]	1277	[illegible] " "	Canadian Interlake Line, Toronto
133713	Hardy Bay	Vancouver, B.C.	1910	Vancouver, B.C.	26 5	6 0	3 0	[illegible]	[illegible]	[illegible] "	H. Browning, Vancouver, B.C.
[illegible]	H[illegible]	M[illegible]			78 3	[illegible] 1	5 7	101	63	[illegible] " "	Harbor Commissioners of Montreal
[illegible]	[illegible]	[illegible] N.S.	1912	Shelburne, N.S.	[illegible]	17 7	[illegible]	[illegible]	[illegible]	[illegible] " "	D. C. Mulhall, M.O., Liverpool, N.S.
[illegible]	[illegible]	[illegible]	[illegible]	Chicago, Ill.	240 1	40 0	[illegible]	1913	[illegible]	[illegible] " "	J. & J. T. Matthews Co., Toronto
[illegible]	[illegible]	[illegible] B.C.	[illegible]	Vancouver, B.C.	[illegible]	[illegible]	[illegible]	[illegible]	5	[illegible] " "	E. Strong, Vancouver, B.C.
[illegible]	[illegible]	[illegible] N.S.	[illegible]	Shelburne, N.S.	71 0	[illegible]	[illegible]	[illegible]	40	1½ " "	J. T. McKenzie, M.O., Jordan Ferry, N.S.
131167	Ovila	Lunenburg, N.S.	1912	Tancook, N.S.	[illegible]	[illegible]	[illegible]	24	[illegible]	1 " "	G. Henneberry, M.O, Sambro, N.S.
·129587	Robert Dollar	Victoria, B.C.	1911	[illegible], Scotland	410 3	54 0	27 1	[illegible]	3420	[illegible]	Dollar Steamship Lines, Ltd., Victoria, B.C.
[illegible]	Shippegans Best	Chatham, N.B.	1912	Shippegan, N.B.	43 0	[illegible]	[illegible]	13	10	[illegible] " "	W. S. Loggie Co., Chatham, N.B.
[illegible]	[illegible]	H[illegible] N.S.	1912	[illegible] N.S.	[illegible]	11 0	7 0	[illegible]	[illegible]	1 " "	J. L. Hart, Sambro, N.S.

[illegible]

List of Sailing Vessels and Barges Registered in Canada during December, 1912.

No.	Name	Port of Registry	Rig	When and Where Built		Length	Breadth	Depth	Reg. Tons	Owner or Managing Owner
133711	[illegible]	Vancouver, B.C.	Scow	[illegible]	Vancouver, B.C.	77 2	32 0	7 6	179	William W. White, Vancouver, B.C.
[illegible]	Ajax H.	Halifax, N.S.	[illegible]	[illegible]	Halifax, N.S.	[illegible]	20 6	6 0	98	Nova Scotia Dredging Co., Halifax, N.S.
[illegible]	[illegible]	Vancouver, B.C.	[illegible]	[illegible]	Hong Kong, China	50 2	11 0	5 4	27	W. Farrell, Vancouver, B.C.
[illegible]	[illegible]		Scow	[illegible]	[illegible] B.C.	[illegible]	32 0	9 0	[illegible]	Dewdney Gravel Co., Vancouver, B.C.
[illegible]	[illegible]	Halifax, N.S.	[illegible]	[illegible]	Welland, Ont.	80 3	36 4	[illegible]	[illegible]	Halifax Dredging Co., Halifax, N.S.
[illegible]	[illegible]	Victoria, B.C.	Barge	1911	Victoria, B.C.	[illegible]	[illegible]	8 0	[illegible]	D. Leeming, Victoria, B.C.
[illegible]	[illegible]		"	[illegible]		90 0	30 0	8 0	[illegible]	E. A. Carew-Gibson, Vancouver B.C.
[illegible]	[illegible]			[illegible]		[illegible]	32 0	8 0	[illegible]	G. P. Roberts, Victoria, B.C.
[illegible]	[illegible]			1912		[illegible]	32 0	8 0	[illegible]	" "
[illegible]	[illegible]			1912		[illegible]	[illegible]	4 0	173	D. Leeming, Victoria, B.C.
133717	McB. No. III	Vancouver, B.C.	[illegible]	1912	N. Vancouver, B.C.	75 1	30 1	8 0	[illegible]	T. G. McBride, Vancouver, B.C.
[illegible]	[illegible]	[illegible] N.S.	Schr.	1912	Lunenburg, N.S.	114 2	26 3	10 2	[illegible]	J. B. Young, Lunenburg, N.S.
[illegible]	N. A. F.			[illegible]	Tancook, N.S.	[illegible]	[illegible]	7 0	24	A. Coutilier, BHalifax, N.S.
[illegible]	[illegible]	Sydney, N.S.		[illegible]	Belleoram, Nfld.	43 1	13 8	[illegible]	[illegible]	G. Herridge, North Sydney, N.S.
[illegible]	[illegible]		[illegible]			[illegible]	30 1	[illegible]	146	Atlantic Dredging Co., Louisburg, N.S.
[illegible]	Sadie No. 10	Victoria, B.C.	Barge	[illegible]	Victoria, B.C.	90 0	[illegible]	[illegible]	[illegible]	Victoria Tug Co., Victoria, B.C.
[illegible]	[illegible] No. 11			1911		90 0	32 0	8 0	[illegible]	" " "
[illegible]	[illegible]	[illegible] N.S.	[illegible]	[illegible]	Lunenburg, N.S.	117 2	[illegible]	10 4	[illegible]	J. Backman, M.O., Lunenburg, N.S.
[illegible]	[illegible]	[illegible] N.S.		[illegible]	Tancook, N.S.	44 0	11 8	5 6	18	A. Sullivan, Herring Cove, N.S.

Atlantic and Pacific Ocean Marine.

The s.s. Zealandia, which left Victoria for Sydney, N.S.W., Dec. 26, was reported, Jan. 2, to have arrived at Honolulu with disabled engines. Repairs were to be made there.

The Cunard- Thomson Line is continuing the arrangement whereby its vessels will call at Plymouth, Eng., on their eastbound trips, sailing thence for London direct, as carried out during last summer.

In connection with the Titanic disaster of last year, claims are reported to have been filed in New York against the White Star Co. for over $10,000,000. It is claimed by the company that, under the U.S. laws, its liability is limited to approximately less than $100,000.

The Uranium Steamship Co.'s s.s. Uranium, when nearing Halifax harbor, Jan. 12, stranded on the shoals off Chebucto Head. It was reported that holes were punched in both port and starboard sides. She was floated Jan. 17, and entered Halifax under her own steam.

The Cunard-Thomson Line, which has been operating steamships Ascania, Ausonia and Ultonia between Canada and Great Britain during the past season, has decided to increase the fleet for next season by adding the Andania and Alaunia, each of 13,000 tons, and of the one class cabin type.

The Allan Line s.s. Carthaginian, which arrived at St. Johns, Nfld., Jan. 10, reported that three days out from Liverpool, Eng., fire was discovered amongst the cargo. This was extinguished after some hours work, but the damage to the vessel apart from the cargo, is said to amount to $10,000.

Ottawa dispatches of Jan. 2 state that arrangements are being made to secure such aids to navigation as will make Hudson Bay and Straits safe for navigation, and that the Government intends sending a party over the proposed route in the spring to arrange for the installation of lighthouses and beacons.

The Hamburg-American Line s.s. Abessinia arrived at Halifax, Jan. 15, in a damaged condition, having had her rudder broken during a storm in midocean. The Allan Line s.s. Armenian had had her in tow, but the cable parted, and in the fog the vessels lost each other. A temporary rudder was fixed, and she came to port under her own steam.

A Montreal press report of Jan. 16 states that it has been officially announced that the C.P.R. has decided to establish an Austro-Canadian service in the spring, with Montreal as the terminal summer port on this side, and St. John, N.B., in the winter, while Trieste will be the Austrian port. The steamships Lake Champlain and Lake Erie will, it is said, be utilized in the service.

The Canadian Northern Steamships' s.s. Royal George sailed from Halifax, N.S., Dec. 28, 1912, for Great Britain, for complete overhauling and repair. She has been docked at Birkenhead, Eng., where the repairs will be undertaken, the original arrangements for docking at Glasgow, Scotland having been changed. It is stated that the damage was less than anticipated, and that she will be able to resume service in the spring.

It is reported from Ottawa that the Government has decided to appoint a commission to investigate the method of appointing pilots for the St. Lawrence and other routes. As a result of enquiries by the Dominion Wreck Commissioner into recent marine disasters, in a number of which the blame was placed on the pilots, the Shipping Federation of Canada called upon the Government to enquire into the pilotage system, alleging, among other things, that it is a comparatively close corporation. It is stated that the commission will consist of two persons connected with the shipping interests and one of the Marine Department's officials.

Maritime Provinces and Newfoundland.

The British s.s. Evelyn, which ran ashore at St. Esprite, Jan. 8, and which was released, sank at the entrance to Louisburg Harbor, N.S., Jan. 9. The crew, numbering 33, were saved.

It is announced that the contract for the building of the new ferry terminals at Halifax, N.S., has been awarded to the Standard Construction Co., and that operations have been commenced on a temporary dock.

The Department of Railways and Canals has awarded the contract for the building of a car ferry steamship, to be operated between New Brunswick and Prince Edward Island, to Sir W. G. Armstrong, Whitworth and Co., Newcastle, Eng.

The Quoddy Coal Co. is applying for incorporation under the New Brunswick Companies Act, with $9,900, and office at St. Andrews, N.B., with power, among other things, to do a general towing, lightering, freighting and forwarding business.

A steel suction dredge is under construction at St. John, N.B., for Government use on the St. John River. It will be 110 ft. long, and will be equipped with triple expansion engine and 15 in. pump. It is anticipated that it will be completed and ready for operation by the reopening of navigation.

Province of Quebec Marine.

The Quebec Harbor Commission has ordered three six wheeled switching locomotives from the Montreal Locomotive Works, for delivery in April.

The Montreal Harbor Commission has awarded a contract for a 1,500,000 bush. addition to its elevator no. 1 to John S. Metcalf Co., Montreal. This will make the total capacity of this elevator 2,500,000 bush.; while the elevator no. 2, recently completed by the same firm, has capacity for 2,600,000 bush. The addition will be of reinforced concrete and steel, and will cost approximately $700,000.

Ontario and the Great Lakes.

At the Lake Carriers Association's annual meeting at Detroit, Mich., Jan. 16, W. Livingstone was re-elected President for the current year.

A proposal is being arranged in Fort William, to have cinematograph views taken of the loaded grain vessels leaving the harbor on the re-opening of navigation.

The Department of Public Works has awarded a contract for the building of the machinery for a dipper dredge, to Polson Iron Works, Toronto. The amount of the contract is $38,000.

The U.S. Government has ordered from the Safety Car Heating and Lighting Co. 16 type C spar buoys with mantle lanterns for lighting the Livingstone channel in the lower Detroit River.

The Peoples Line steamboat Frontier was offered for sale, by public auction, at Toronto, Jan. 25, on the order of the Marshal for the Toronto Admiralty District, to satisfy claims made by the captain, crew and others.

The Montreal Transportation Co.'s annual meeting was held at Montreal, Jan. 17. Following are the officers and directors for the current year:—President, B. McLennan; Managing Director, L. L. Henderson; other directors, A. E. Ogilvie, T. A. Crane, Farquhar Robertson.

The Farrar Transportation Co., operating the steamships Collingwood and Meaford in the bulk freight trade, has declared a dividend of 10% for the past year, with a bonus of 5%. The annual report shows gross earnings of $173,181, and net profits of $73,338. There is a paid up capital of $250,000.

The two bucket ladder dredges which are under construction at Collingwood, for the Marine Department, will be of the following dimensions:—Length, 218 ft. over all; keel, 210 ft.; beam, 37½ ft.; depth, 14 ft. They will be equipped with triple expansion engines with cylinders 15, 25 and 42 ins. diar. by 26 ins. stroke, supplied with steam by two Scotch boilers, 11½ by 10½ ft., at 180 lbs. pressure. A forced draught system is to be installed.

Capt. McInnes, for about 50 years prominent in navigation circles on the Upper Lakes and Lakes Couchiching and Simcoe, died at Orillia, Ont., Jan. 14. He sailed on Lake Simcoe as early as 1853, and built and ran the steamboat Islay, in connection with a summer resort at Strawberry Island, a number of years ago. Later he owned and operated the passenger steamboat Oneida between Collingwood and Chicago, and Chicago and Ogdensburg.

It is announced from Fort William, that the Chicago, Duluth and Georgian Bay Transit Co. will operate a passenger service beimportant ports en route, during the coming important ports enroute, during the coming season. The first trip is scheduled for June 21. The vessel which was launched in Jan., will have five decks with accommodation for 700 passengers in staterooms, and she will also have swimming pool, children's play rooms and other modern conveniences.

The U.S. Lake Survey reports the levels of the Great Lakes, in feet above tide water, for Dec., 1912, as follows:—Superior, 602.11; Michigan and Huron, 580.23; Erie, 571.47; Ontario, 246.11. Compared with the average December levels for the past ten years, Superior was 0.26 ft. below; Michigan and Huron, 0.07 ft. above; Erie, 0.25 ft. below; Ontario, 0.71 ft. above. It was anticipated that during January Superior would fall about 0.5 ft.; Michigan and Huron about 0.1 ft., and Erie and Ontario would remain stationary.

The St. Lawrence and Chicago Steam Navigation Co.'s steamship, which is under construction at Collingwood, will be, it is claimed, the largest cargo carrying boat on the Canadian Lakes. Her dimensions are as follows:—Length over all, 550 ft.; length between perpendiculars, 529 ft.; beam, 58 ft.; depth, moulded, 31 ft.; estimated carrying capacity, 10,000 tons. She will be equipped with triple expansion engines, with cylinders 24, 40 and 66 ins. diar., by 42 ins. stroke, supplied with steam by three Scotch boilers 13 ft. diar., by 11 ft. long, at 185 lbs. pressure. The furnaces, which will be equipped with forced draught, will have a grate area of 45 ft. to each boiler. She is being built with side tanks, six compartments, and there will be 31 hatches, spaced 12 ft. centres.

The ratepayers of Midland have voted in favor of a bylaw granting a bonus of $25,000 for the construction of a dry dock there. We are advised that a floating dry dock of steel is to be built in connection with the vessel repair plant operated there by Jas. Playfair and associates, and that it will be built in two sections, the first one being, approximately, 125 by 70 ft., additions being made as the business develops. The first portion of the bonus will be paid on the completion of the first section, and the balance on the completion of the dock, or the second section. The work will all be done locally by the company's own men, and if the dock, when completed, comes within the Government's requirements, a subsidy will be applied for under the Dry Dock Subsidy Act.

At the recent annual meeting of the Muskoka Lakes Navigation and Hotel Co. in Toronto, a dividend of 5% for the past year was declared. This is the first dividend paid for 13 years, though the company has been materially improving its financial position year by year. The report was considered satisfactory. W. F. Wasley, Traffic Manager, stated that though the season was notoriously a poor one, the company's traffic had been practically equal to the previous year. It was stated that though there would be no immediate additions to the fleet, two vessels would be added in 1914, if the forthcoming season's traffic appeared to warrant it. The officers and directors were re-elected for the current year as follows:—President, H. C. MacLean; Vice Presidents, G. T. Somers and W. K. George; other directors, R. S. Wilson, F. F. Brintnell and A. McL. Macdonnell. The Traffic Manager is W. F. Wasley, and the Manager of the Royal Muskoka Hotel is L. W. Maxson.

Manitoba, Saskatchewan and Alberta.

The statistics of shipping passing through the St. Andrews locks, on the Red River, during the 1912 season of navigation, show a tonnage of 95,549 against 47,135 for the previous year, an increase of 48,414 tons. There was considerable increase in general shipping in the neighborhood of Winnipeg during the year. The total tonnage of steam vessels plying up the river was 48,748, and of sailing vessels 55,437, a total of 104,385, while down the river the tonnage was 106,538. The tons of freight carried up to Winnipeg were 94,866, and 683 tons were carried down.

British Columbia and Pacific Coast Marine.

The C.P.R. s.s. Princess Maquinna, which is under construction at Esquimalt, was fitted with her boilers early in January. They were brought from Great Britain.

The contract for the construction of a breakwater at Victoria has been awarded by the Dominion Public Works Department to Sir John Jackson (Canada), Ltd., Montreal, of which company A. Brooks is the resident director.

The C.P.R. s.s. Princess Sophia was recently taken off her route for an overhauling, and at the same time to have complete oil burning equipment installed. Oil tanks had already been installed at the time of building the vessel. It was anticipated that she would be ready to relieve the s.s. Princess May on the Skagway run, Jan. 24.

The Continental Shipping and Trading Co., Ltd., has been incorporated under the British Columbia Companies Act, with $200,000 capital and office at Vancouver, to carry on the general business of merchant carrier by land and water, and in connection therewith to own and operate steam and other vessels, aeroplanes, airships, etc.

The work of surveying the harbors and making test borings, at Victoria and Vancouver, which has been undertaken by the Dominion Public Works department, and which is under the charge of H. M. Davy, engineer of the department, was completed Jan. 8, so far as Vancouver is concerned, that in connection with Victoria, it was announced, would probably be completed early in February, and that before leaving for the east the party would make a survey of Prince Rupert harbor.

An Ottawa dispatch of Jan. 7 states that the Dominion Government is to proceed at once with the construction of a public wharf at Vancouver. It is stated that instructions have been given for the expropriation of several lots in the vicinity of the sugar refinery, and as soon as this is effected, the building of the dock will be proceeded with. The cost is estimated at $500,000.

A press report from Vancouver states that an English syndicate, with Mexican connections, is making an investigation of the wharfage facilities at Vancouver, Puget Sound, Californian and Mexican ports, with a view to the establishment of a steamship line. It is stated that a report is to be made to the Mexican Government in the matter, and certain land grants are to be made there in connection with the project.

J. W. Troup, Manager, C.P.R. British Columbia Coast Service, who sailed for England Jan. 10, is reported to have stated in Montreal that two additional vessels are to be ordered in Great Britain for the Coast Service, to be placed on the routes now covered by the steamships Princess Charlotte and Princess Victoria, which will be transferred to other routes. It is reported that the new vessels will be driven by turbines.

The Union Steamship Co.'s s.s. Cheslakee sank, Jan. 7, at the wharf at Van Anda, Texada Island, and four lives were lost. It is stated that the accident was due to the leaving open of an ash chute. The Cheslakee was built at Dublin, Ireland, in 1910, her dimensions being:—Length, 126 ft.; breadth, 28.1 ft.; depth, 17 ft.; tonnage, 526 gross, 261 register. She is equipped with engine of 65 n.h.p., driving a screw. Arrangements are being made for salving the vessel.

The North Vancouver Ferries, Ltd., for 1912 showed earnings of $137,794.16, an increase of $13,318.55 over those of the previous year, notwithstanding that a lower tariff came into force in April, 1912. There was a surplus over transportation charges of $61,417.84. The general charges and office expenses were $36,522.64, and the net profit was $7,467.06. During the year the company installed new boilers in ferry no. 2, and made general improvements to ferries nos. 2 and 3, equipped the vessels for burning oil fuel, and made extensions to its wharf at Vancouver.

The Georgian Bay Canal Project.—The Dominion Parliament is being asked to extend the time within which this projected waterway from Montreal to the Georgian bay at the mouth of the French river may be built, and to authorize the company, in lieu of the provisions of sec. 22, chap. 103 of the statutes of 1894 to issue bonds for $175,000,000.

John F. Pierce has been appointed District Passenger Agent of the Richelieu and Ontario Navigation, Niagara Navigation Co., Thousand Island Steamboat Co., and R. & O.N. Co. of the United States, with territory covering the New England states and the maritime provinces. His office is at Boston, Mass.

The Canadian Marconi Wireless Telegraph Co. has announced that it has completed a new agreement with the Newfoundland government, whereby the number of stations operated by it there will be increased from five to ten, until 1926, under an annual subsidy of $1,500 and other considerations involving exclusive rights during that period.

White Pass and Yukon Railway's River Service.

In his report for the year ended June 30, 1912, President O. L. Dickeson gives the following particulars of the company's river division:—

The fleet in 1911 carried 4,912 passengers and 15,825 tons of revenue freight. Eight steamboats and 10 barges were in operation on the river and lakes during the season, the remaining steamboats and barges being held in reserve for emergencies. The first boat left Hootalinqua for Dawson May 19, and the first through boat left Whitehorse for Dawson June 8. The first boat for Atlin left Caribou June 10. The last boat from Dawson reached Whitehorse Oct. 30, which is considerably later than the River Division steamers have operated since this service was established. The last boat from Atlin reached Caribou Oct. 28.

Some special work was done at the Whitehorse shipyards to facilitate the placing of the fleet in winter quarters and to carry on the necessary repair work before the opening of navigation. A new lathe was installed in the shops to replace the old one.

The River Division was operated without any accidents and there were, therefore, no repairs or renewals out of the ordinary to any of the boats except the Whitehorse and Selkirk. The repairs to the latter consisted of new cylinder timbers and about 35 ft. of her after hull was rebuilt. New cutoffs were installed in the engine of the Whitehorse at a slight cost, which resulted in a saving of approximately $3,000 in her fuel consumption during the past season.

The construction of the new Casca was commenced late in the season of 1910 and completed in 1911. She was launched ~~Oct.~~ 15, making a trial trip Sept. 2 from Whitehorse to Lower LeBarge and return, which proved successful. Her maiden voyage was made Sept. 15, carrying 250 tons of freight and mail. Her draft leaving Whitehorse was 3 ft. 5 ins. aft, 3½ ft. amidship and 3 ft. 10 ins. forward. Other steamboats on the same draft could only carry approximately 150 tons, illustrating the economical value of changes applied in the construction of the new boat. On this trip no special effort was put forth to make fast time, it being necessary for the captain and pilot to become familiar with handling her, but the speed was very satisfactory. Subsequent performances prove the Casca the most economical and best steamboat in the fleet. Following are brief particulars:—Length, 161 ft.; beam, 37 ft.; depth of hold, 5½ ft.; draft, light, 24 ins.; rooms for officers and crew, 11; rooms for passengers, 34; berths, 64; table seats for 40 passengers; registered tonnage, 790.

In respect to passenger arrangement and appearance she is practically a duplicate of the Whitehorse, except that she shows more breadth. There is an extra foot of width on each side of her promenade deck, making her an attractive boat for tourists.

A saving in operation of $77,994.72 was effected, as compared with 1910.

The company's fleet consists of 19 steamboats, 14 barges and one launch.

Pressures of from 4 to 35 lbs. per sq. in. of surface on work being ground on a disc wheel have been determined by experiments to be the proper pressures for grinding. A less pressure than 4 lbs. per sq. in. results in polishing and burnishing the work. For this reason it is necessary, when grinding light pieces on a horizontal disc wheel, to load them with weights when the weight of the piece does not impose a pressure of more than 4 lbs. per sq. in.

Lake Grain Shipments.

[illegible] Port Arthur and Fort William to Canadian ports during the crop year of 1911-12.

	Wheat	Oats	Barley	[illegible]
[illegible]	[illegible]	[illegible]		[illegible]
[illegible]	[illegible]	[illegible]		[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]		[illegible]	[illegible]	[illegible]
Alberta	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]		[illegible]	
[illegible]	[illegible]			
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	30,000	[illegible]
[illegible]	[illegible]	210,959	[illegible]	[illegible]
C. A. Jaques	[illegible]	246,405	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	329,667		[illegible]
[illegible]	[illegible]			
[illegible]	[illegible]	[illegible]		
[illegible]	227,819	[illegible]	19,452	19,89[illegible]
[illegible]	[illegible]			
D. A. Gordon	[illegible]	[illegible]		[illegible]
[illegible]	[illegible]	[illegible]		
[illegible]	879,130	183,888	[illegible]	
[illegible]	414,086	227,264	[illegible]	[illegible]
[illegible]	327,235	421,410	10,000	[illegible]
[illegible]	,970,638			
Edmonton	453,735	[illegible]	32,302	[illegible]
[illegible]	,696,058	170,000	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]		[illegible]
[illegible]	[illegible]	163,034	17,000	
[illegible]	[illegible]	231,283	77,377	
[illegible] City	[illegible]	[illegible]	[illegible]	[illegible]
G. R. [illegible]	[illegible]	60,560	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]		
[illegible]	[illegible]		6,501	
H. M. [illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	285,137	[illegible]	[illegible]
[illegible]	[illegible]	165,338		
J. A. [illegible]	[illegible]	[illegible]	[illegible]	[illegible]
J. H. [illegible]	[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	629,492	[illegible]	78,007
[illegible]	801,530	[illegible]	[illegible]	26,588
[illegible]	[illegible]	[illegible]	[illegible]	
[illegible]	609,427	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]		[illegible]	[illegible]
[illegible]	[illegible]	292,563	[illegible]	
[illegible]	415,580	[illegible]		
[illegible]	[illegible]			[illegible]
Midland King	[illegible]	202,637	[illegible]	[illegible]
Midland Prince	[illegible]	[illegible]		[illegible]
Midland Queen	[illegible]	130,000	[illegible]	[illegible]
[illegible]	1,091,725	75,000		
Neebing	[illegible]	300,000		
[illegible]	[illegible]	206,220		
[illegible]	[illegible]	91,760	[illegible]	
[illegible]	[illegible]	615,440	[illegible]	
[illegible]	188,718	[illegible]		[illegible]
[illegible]	[illegible]	83,605		[illegible]
[illegible]	[illegible]	207,413		[illegible]
R. R. [illegible]	[illegible]	[illegible]		[illegible]
[illegible]	[illegible]	[illegible]		[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	281,574	[illegible]	[illegible]	[illegible]
[illegible]	426,835	[illegible]	[illegible]	
[illegible]	402,985	[illegible]		
[illegible]	1,043,302	1,005,123	[illegible]	[illegible]
[illegible]	205,000	169,678	[illegible]	[illegible]
Senator Derbyshire	[illegible]	168,458	[illegible]	[illegible]
[illegible]	7,029	20,531	[illegible]	
[illegible]	300,000	[illegible]	[illegible]	
[illegible]	[illegible]	127,000		
[illegible]	[illegible]	264,227		
[illegible]	365,488	150,000		
[illegible]	75,400	261,783	[illegible]	[illegible]
[illegible]	706,636	552,658	[illegible]	[illegible]
[illegible]	1,050,343	100,000		
[illegible]	877,235	406,776		
[illegible]	68,000			
W. D. Matthews	1,6[illegible]6,677	286,620	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	817,805	832,451	[illegible]	[illegible]
[illegible]	1,043,875	[illegible]		[illegible]
[illegible]	[illegible]			
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]			78,007
Shipped in foreign vessels to foreign ports	30,468,316	[illegible]	1,660,888	2,783,295
Totals	85,652,167	20,600,258	3,028,047	3,07[illegible],140

In addition to the [illegible] 7,061 bush. of rye [illegible] Edmonton and [illegible] to Canadian ports.

Stranding of the s.s. Sindband.—The judgment in the enquiry into the stranding of the s.s. Sindbad at Cheticamp Harbor, N.S., Oct. 1, 1912, delivered recently by [illegible] Commissioner, and concurred in by Capts. [illegible] the master of the vessel from all blame for the casualty, which was due to the vessel striking on an unknown shoal, which was not marked on the charts and sailing directions used by him, although the shoal appears to have been pretty well known locally.

Grounding of the s.s. [illegible]

[illegible] We are of the opinion that this was the cause of the grounding, and therefore find [illegible] error of judgment, but on account of his good record, we feel that he should be exonerated from all blame, and we hand him back his certificate.

We are of the opinion that a more definite under-standing ought to exist between owner and master as to the very important question of sacrificing safety for time, and also would accentuate the necessity of masters keeping a night order book, in order that no misunder-standing may occur in the issuance of instructions having reference to the safe navigation of vessels. In view of the fact that the volume of passenger traffic has greatly increased on the coast during the last few years, it becomes of paramount importance that the owners should see that the rules and regulations issued by them appertaining to safe navigation be lived up to, and also every facility and support should be given masters in maintaining such discipline as will tend to minimize public criticism when accidents of this kind occur, and that masters themselves should see that the internal discipline and routine maintained on board their vessels should be such as to insure the utmost vigilance in order to contribute to safe navigation.

New Vessels for Canadian Pacific Railway Atlantic Service.

[illegible] Marine World for January, the C.P.R. has placed an order [illegible] Atlantic service. These vessels will be of [illegible] tons.

[illegible] Length, 500 ft.; breadth, 64 ft.; depth, moulded to shelter deck, 39 ft. The loaded draught will be about 28 ft., and the speed will be about 15 knots an hour. The machinery will consist of two sets of quadruple expansion engines, with cylinders 26, [illegible] ended boilers, 15¾ ft. diar., by 11 ft. long, [illegible]

The Lake Winnipeg Brick and Lumber Co. has been incorporated under the Manitoba Companies Act, with very extensive powers for the development of lands in the province, operating vessels, carrying on the business of a common carrier, the ownership of docks, wharves and terminal facilities, etc., but it is added:—"Nothing herein contained shall be construed as authorizing the company to operate a railway." The company's capital is fixed at $200,000, its chief offices are in Winnipeg, and the provisional directors are: T. F. Shannon, W. [illegible] Fletcher, Winnipeg.

The White Star Vessels Olympic and Britannic.

The White Star Line s.s. Olympic, which is being reconstructed at Belfast, Ireland, has been definitely scheduled to leave Southampton on April 2, sailing from New York on the return trip April 12, for Plymouth, Cherbourg and Southampton.

The chief object of the reconstruction work, which will entail an enormous expense, is the introduction of an inner skin of heavy steel plates, continuing, in effect, the present double bottom well above the water line and providing considerable additional protection throughout the hull. The recent published reports to the effect that oil fuel would be transported between the outer and inner plates of the Olympic is entirely unfounded. Coal will continue to be used as the only fuel.

Throughout the Olympic the builders are placing a number of additional water tight bulkheads of exceptional strength, several of them being carried through to the B deck which is 40 ft. above the water line. These new bulkheads and the new inner skin will largely increase the flotation capacity and enhance the margin of safety far beyond previously recognized standards.

Similar safeguards are being introduced into the new Britannic, the 50,000 ton triple screw steamer now in course of construction for the White Star Line.

The Proposed Enlargement of the Chicago Drainage Canal Refused.

The application of the Sanitary District of Chicago, Ill., to the U. S. War Department for permission to divert water from Lake Michigan, at the rate of 10,000 cub. ft. a second, instead of about 4,167 cub. ft. as at present, has been dismissed.

In the course of his judgment, the Secretary of the Department states that reports of commissions and engineers show that the withdrawal of such a quantity of water would substantially interfere with the navigation of the Great Lakes and connecting rivers, and that observations during the last 46 years show that the drain would reduce the lake levels from 4.8 ins. on the St. Lawrence River to 6.9 ins. in Lakes Huron and Michigan at mean lake levels, the lowering effect being much greater at low water periods, when the additional shortage would be most keenly felt. This reduction would substantially injure all the U. S. and Canadian harbors on the Great Lakes, and at Montreal the river level would probably be lowered by 12 ins. The U. S. Government has spent over $90,000,000 on its harbors in the district covered, and the Canadian Government has improved over 50 of its harbors, which would suffer. The reconstruction of the Sault Ste. Marie and other canals might even be necessary, owing to the reduction of the depth of water over the sills. The lowest estimate by engineers of the injury to U. S. vessels, by a reduction of their tonnage capacity, has been placed at $1,000,000 a year, while the International Waterways Commission places the loss at the interest on a capital of $37,500,000. The Secretary says that he can find nothing in the waterways treaty of 1909 bearing on the questions before him, for beyond the [illegible] of mutual rights of navigation, the question of the right of diversion at Chicago appears to have been carefully excluded [illegible] declares [illegible] Canadian view, that the granting of the application would [illegible] the national interests of their country [illegible] place it under the jurisdiction of the International Waterways Commission rather than that of an administrative officer.

This matter has been before the Department some time, and various representations have been made by Dominion interests. The opposition to the application was dealt with at a hearing at Washington, Mar. 27, 1912, when it was stated that the water level at Montreal would be lowered 10¼ ins., and that under the low water conditions then existing at Montreal two ocean going vessels sacrificed 8,340 tons of cargo. Other information was also given, showing the probable effects at Kingston, Toronto and other harbors. Amongst those representing Canada at the hearing were: F. King, Counsel, Dominion Marine Association, who also represented the Kingston Board of Trade; A. A. Allan, Allan Line Steamships; F. E. Meredith, Shipping Federation of Canada; D. Seath, Montreal Harbor Commission; R. W. Reford, Montreal Board of Trade; F. S. Spence, Toronto Harbor Commission; G. T. Blackstock, K.C., representing various Niagara interests, while the Minister of Marine had previously appointed John Kennedy, Consulting Engineer, Montreal Harbor Commission; J. Stewart, of the Hydrographic Department; and V. W. Forneret, St. Lawrence Ship Channel Engineer, in connection with the preparation of the case for the Dominion.

Canadian Notices to Mariners.

The Department of Marine has issued the following:—

319. Dec. 10. British Columbia, Strait of Georgia, Burrard inlet, Atkinson point, change in fog alarm.

320. Dec. 10. British Columbia, Queen Charlotte islands, Cape St. James, nonexistence of rock southeastward of.

321. Dec. 11. Nova Scotia, south coast, Owlshead bay, Owlshead, hand fog horn at lightstation.

322. Dec. 11. Nova Scotia, Cape Breton island, east coast, Sydney harbor, southeast bar, change in characteristic of light.

323. Dec. 11. Prince Edward Island, south coast, Hillsborough bay, St. Peters island, light improved.

324. Dec. 11. Quebec, Gulf of St. Lawrence, Ste. Anne des Monts, bearing of range lights.

325. Dec. 20. Canada, list of official government publications useful to mariners.

326. Dec. 23. British Columbia, Strait of Georgia—Sandheads of Fraser River, lightship removed from her station temporarily for repairs.

327. Dec. 23. British Columbia, Strait of Georgia—Fraser River mouth, change in color of beacon lights.

328. Dec. 23. British Columbia, Queen Charlotte Islands—Graham Island, chart of Masset Sound and Inlet issued.

329. Dec. 23. Alaska, Dixon Entrance—Barren Island, light to be established.

330. Dec. 26. Ontario, River St. Lawrence—Thousand Islands, color of day beacon southeastward of Jackstraw Shoal.

331. Dec. 26. Ontario, Lake Erie—Port Burwell, change in color of front light of outer range.

332. Dec. 26. Ontario, St. Clair River—south part of Stag Island, gas buoy to be established.

333. Dec. 26. Ontario, Lake Superior—Thunder Bay, Port Arthur gas buoy replaced by gas and bell buoy.

334. Dec. 26. Ontario, Lake Superior—Victoria Channel, Mink Island reef, beacon rebuilt.

335. Dec. 26. New Brunswick, south coast, Bay of Fundy, Passamaquoddy Bay, St. Aidrews Harbor, Tongue Shoal, light improved.

336. Dec. 26. New Brunswick, Bay of Fundy, Chignecto Channel, Grindstone Island, new lighthouse, change in character of light.

337. Dec. 26. Nova Scotia, south coast—Halifax approach, Chebucto Head, temporary light.

338. Dec. 26. Prince Edward Island, north coast, off entrance to Cascumpeque Harbor, color of bell buoy.

339. Dec. 26. Quebec, River St. Lawrence—Channel Patch, change in color of gas buoy light.

340. Dec. 26. Newfoundland, west coast—Gulf of St. Lawrence, Ferolle Point, fog alarm established, light to be established.

341. Dec. 28. Ontario, Winnipeg River, White Dog Island to Kenora, buoys established.

342. Dec. 31. British Columbia, Discovery Passage, Seymour Narrows, Maud Island, change in position of gas lighted beacon.

343. Dec. 31. British Columbia, Queen Charlotte Islands, Houston Stewart Chan-Stewart Channel, postponement of date of removal of beacon from Koya Point to Danger Rocks.

1. Jan. 7. Caution when approaching Canadian ports.

2. Jan. 3. British Columbia, Strait of Georgia, Galiano Island, Porlier Pass, Race Point, hand fog horn at light station.

3. Jan. 3. British Columbia, Burrard Inlet, Vancouver harbor, telephone cable laid across the harbor from Vancouver to North Vancouver, caution.

7. Jan. 16. British Columbia, Johnstone Strait, Cracroft Island, westward of Boat harbor, light to be established.

8. Jan. 16. British Columbia, Tolmie Channel, Swindle Island, Separation Point, gas lighted beacon established.

9. Jan. 16. British Columbia, Queen Charlotte Islnads, Houston Stewart Channel, Flat Rock, light discontinued, beacon removed.

10. Jan. 16. British Columbia. Queen Charlotte Islands, Hecate Strait, Skidegate Inlet, eastward of Deadtree Point, can buoy to be replaced by gas buoy.

11. Jan. 16. British Columbia, Queen Charlotte Islands, Hecate Strait, Skidegat Inlet, off Lawn Point, intended change in position of gas and bell buoy.

12. Jan. 22. Nova Scotia, south coast, Halifax harbor, eastern passage, buoys established.

13. Jan. 22. Nova Scotia, south coast, Halifax approach, Devil Island, easterly light improved.

14. Jan. 22. New Brunswick, Northumberland Strait, Tormentine Reefs, bell buoy re-established.

15. Jan. 22. Quebec, Chaleur Bay, Carleton, Tracadigash Point, change in character of light.

16. Jan. 22. Quebec, St. Lawrence River from Quebec to Father Point, first edition of the St. Lawrence Pilot (below Quebec) issued.

The appointment has been gazetted, of Capt. H. St. George Lindsay, Ottawa, to be Wreck Commissioner under the Department of Marine and Fisheries, from June 1, 1912, vice Capt. L. A. Demers, who resigned on his appointment as harbor master

The Colonial Secretary announced in the British House of Commons, Jan. 22, that in order to be in a position to cope with the demands of traffic on the opening of the Panama Canal, the Government of Jamaica was in negotiation with a Canadian syndicate for the provision of better facilities for coaling and docking. A site for a vessel repair plant is said to have been secured at Kingston, and harbor improvements are under way at Trinidad, Port of Spain and St. George, and oil bunkering stations at Barbadoes and St. Lucia.

Canadian Railway and Marine World.

March, 1913.

Rotary Snow Plows, Their History, Construction, Etc.

By H. H. Vaughan, M. Can. Soc. C. E., Assistant to Vice President, Canadian Pacific Ry.

The development of the rotary snow plow has been chiefly due to Canadians and Canadian railways. This might be invidiously explained by the amount of snow which is supposed to fall in Canada, although as a matter of fact the difficulties experienced in dealing with snow are just as great on most of the roads crossing the Rocky and Cascade Mountains in the United States as they are on those in Canada.

In both countries the rotary snow plow has been extensively used during the past 20 years, and it has proved so far to be the only effective appliance for dealing with deep drifts and snow slides that were beyond the capacity of the wedge or ordinary snow plough. The latter is still used extensively, and for drifts of moderate depth through which a reasonable speed can be maintained, it can be operated much more quickly than the rotary. When cuts are too deep, snow cannot be thrown out of them with a wedge plow, and in the case of slides the drift may contain rocks or trees, which would make the use of it exceedingly dangerous. The rotary plow can then be used to save the labor of shovelling out by hand, which would be the only resource, on account of its ability to encounter snow of any depth and throw it to a considerable distance on either side of the track.

The rotary snow plow was originally invented by J. W. Elliott, a Toronto dentist, who in 1869 took out a patent on a "compound revolving snow shovel." This invention employed a wheel having a number of flat arms supported on a shaft rotating in line with the track. The wheel was enclosed in a casing shaped at the forward end to collect the snow, and flaring backward to a cylindrical portion surrounding the wheel. This casing was open at the top to permit the snow being thrown out by the centrifugal force. The wheel was driven by a rotary engine, and while the design was obviously crude, it evidently included the principle elements of the modern plow. No practical use was, however, made of this invention, but the idea was later taken up by Jull, who improved the Elliott wheel by placing a knife or cutting wheel in front of it. This knife wheel was intended to cut the snow from the bank and pass it into the fan wheel behind it, by which it could be discharged through the top of the casing.

The Jull invention was taken up by Leslie Bros., of Orangeville, Ont., who proceeded to construct a full size working model. The fan wheel was mounted on a hollow shaft, the knife wheel being carried on a solid shaft which passed through it. Both shafts were reolved in opposite directions through a system of bevel gears driven by a two cylinder engine. This model was erected on the end of a flat car during the winter of 1883-84 at the C.P.R. shops at Parkdale, Toronto, but before its construction was completed the winter was practically over. In order to test the invention, a bank of snow and ice was shovelled into a cut through which the C.P.R. tracks ran between Queens Wharf and Parkdale. The quantity available was limited, but it was clearly demonstrated that the Elliott principle of a revolving wheel could throw the snow clear of the tracks as both snow and ice were thrown over 200 ft. This preliminary trial also showed that it was necessary for the plow to be so constructed that snow could be thrown on either side of the track, and that a flanger was required to prevent the plow being derailed in hard snow or ice and leave a satisfactory rail after it has passed through. With the Jull knife the direction in which the snow was thrown could not be changed, as the wheel could only operate in one direction, and the opening in the top of the casing was fixed in position. Leslie Bros. then developed a wheel with reversible knife or cutters, which could be changed in position to enable them to cut in either direction, and a movable hood on the cylindrical portion of the casing through which the snow could be discharged on either side of the track. They also devised a suitable flanger or ice cutter, which was attached to the front truck of the plow. A full sized complete plow of this design was constructed for them by the Cook Locomotive Works, of Patterson, N.J., and was operated on the Chicago and North Western Ry. in Northern Iowa in 1885-86. It was then found that the principle of employing two wheels revolving in opposite directions was impracticable, as the friction caused by the snow passing between the two wheels absorbed more power than that actually required to cut away and throw the snow. It consequently had to be abandoned, but Leslie Bros. then devised a single wheel having knives or cutters directly attached to it, which automatically reversed in position according to the direction in which the wheel revolved. The plow with this wheel applied (shown in fig. 1) was tested during the same winter, before the snow had entirely disappeared, and proved that the loss of power was overcome. It was then shipped back to Patterson and rebuilt with the improvements that had been suggested by the season's experience. During the winter 1886-87, the improved plow, then known as the rotary, was given its first trial on the Oregon Short Line Division of the Union Pacific, where it proved such a complete success that the railway company not only purchased it after its first trip, but placed orders for three more of the same pattern to be furnished in time for the following winter. The introduction of the rotary progressed rapidly from that date. It was adopted by the Northern Pacific; Chicago and North Western; Chicago, Milwaukee and St. Paul, and many other roads in the United States, while in Canada eight were constructed by the C.P.R. in 1888 at its Montreal shops through the Polson Iron Works Co. of Toronto. The first of these plows, no. 101, had a wheel 9 ft. 10½ ins. in diameter, a boiler having 1.259 sq. ft. of heating surface carrying 180 lbs. pressure, and a two cylinder engine 17 ins. diameter by 24 in. stroke. The cab was of wood, and the plow without tender weighed 125.000 lbs. in working order. The main shaft was 8½ ins. diameter and the bearing 34 ins. long. The bevel gear on the main shaft was driven by a bevel pinion keyed to the cross shaft of the engine. The joint between the casting and the one supporting the engine shaft bearings proved to be a point of weakness on account of the heavy bending strain to which it was subjected when the lower portion of the casing was forced into hard snow. The side frame was a heavy 12 in. channel running from end to end. It was tied together by the main bearing casting and engine shaft casting at the front end and from the latter two inner frames extended to the back end. These supported the cylinder saddle and the boiler carriers, and were connected to the side frames by gusset plates. The structure was fairly strong longitudinally, but as later experience proved it did not possess the necessary vertical strength for the work it was subjected to.

The wheel with which these plows were fitted was known as the square fan type, and is illustrated in figure 2. The back was a sheet of steel plate to which longitudinal gusset plates or partitions were attached, which in their turn supported the front rings and the trunnions for the knives or cutters. The action of these knives can be clearly seen from the illustration. In whichever direction the plow was turning the resistance of the snow would tend to force the knives into a position in which they would cut the snow and deliver it into the compartments. Then, on account of the centrifugal force due to the revolving wheel, it would be forced against the casing until the opening was reached, when it would fly out in a straight line. This wheel proved satisfactory when handling the dry snow found east of the Rockies, but in heavy work the partitions were not sufficiently strong to drive the knives. As the men on the plows put it—"The back ran away from the front." To overcome this and handle the damp snow found on the western slopes, Leslie Bros. introduced the scoop wheel shown in fig. 3. In this wheel the pockets or compartments are conical shaped scoops strongly secured to a cast iron or cast steel centre. The knives are carried on the edges of the scoops, and the knives on the adjacent edges of each pair of scoops are connected together by links so that as one knife is cutting the snow, the other is pressed down to afford the necessary clearances. This style of wheel entirely superseded the older square fan type and has since been used.

The construction of the plow as a whole has not changed radically, with the exception of the special plows which will be described later. The wheel has been increased in diameter, 11 ft. being now the usual size. The engine and boiler capacity have been increased, the engine to 18 ins. diameter by 26 ins. stroke, the boiler to 200 lbs. pressure, with 1,852 sq. ft. heating surface. The bevel gear drive was changed to employ two bevel pinions with independent engine shafts, the bevel gears and pinions being made of steel with cut teeth in place of the cast iron gears originally used. The knives, which were originally made of steel plates, were greatly increased in strength and [illegible] Cut wideners were added to the casing to enable the knives to be cut away and the strength of the casing greatly increased especially at the cutting edge. Fig. 4 shows a plow constructed for the C.P.R. in 1911, in which cut wideners were applied, which in this view are photographed in their working position. When not required they can be folded back against the sides of the casing, the rods which hold them in position being then removed.

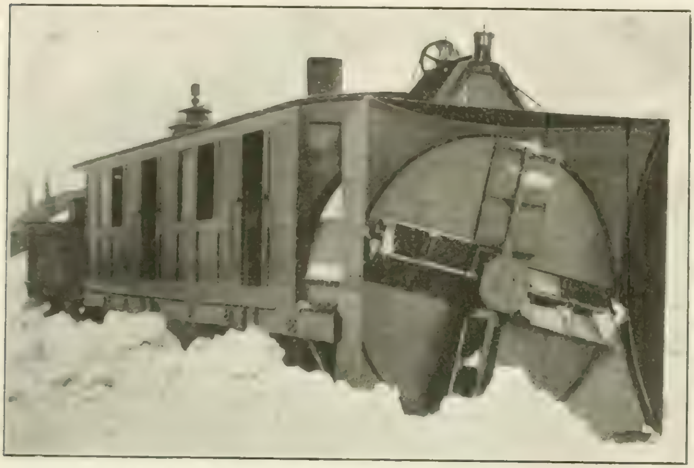


Fig. 1.—Early Leslie Type of Single Cutter Rotary Snow Plow.

These photographs illustrate the development that [illegible] rotary snow plow [illegible] winter weather [illegible] and [illegible] been many [illegible] the [illegible]

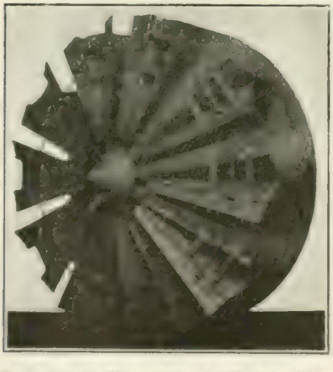


Fig. 3.—Leslie Type of Scoop Wheel for Snow Plow.

operated on the C.P.R., and to a great extent this opinion is no doubt correct. On the other hand, the heaviest service a plow is subjected to is when cutting its way through snow slides, and unfortunately these are met with on every road that operates to the Pacific Coast. The snow in a slide is not only packed exceedingly hard, but it is liable to contain trees and rocks which are carried with it down the mountain side. No plow can, of course, remove such obstructions, and when they are discovered they are either pulled out or blasted away. There is, however, a very strong pressure on every railway to open up the line in the shortest possible time, and to effect this the usual method of operating a rotary was to put two heavy engines behind it, run the plow engine as fast as possible and drive it into the cut at 8 or 10 miles an hour. As the plow slowed down it was drawn back, [illegible] up again and the operation repeated. If [illegible] were frequently torn off or damaged, and their repair was an extremely difficult and tedious job. [illegible] the plow frame, were a constant source of trouble [illegible] George Bury, then General Manager, Western Lines, C.P.R., was engaged for a considerable time in operating rotary plows, and decided that a plow was required that practically could not break down and that would have sufficient power and strength to cut its way through any snow bank. His instructions were that he wanted a plow with knives of 2 in. armor plate and the rest in proportion. Authority was given the following spring for two plows to these specifications, and arrangements were made with the Montreal Locomotive Works for their construction. J. Player, Consulting Engineer of the American Locomotive Co., was engaged to prepare the design, in collaboration with the writer, and it was decided to modify the construction of the regular rotary plows considerably. The writer had for some years believed that better results could be obtained by driving the plow wheel direct, in marine engine style, than through the bevel gears previously used, and that the frame of the plow should resemble a bridge girder, to thoroughly support the casing or hood in place of the channel iron frame, which required bracing to prevent its bending. After some preliminary designs had been prepared it was decided to adopt these suggestions and as the work progressed a number of novel features of construction developed. One of the most important provisions was that of obtaining a wheel of greatly increased strength. The use of a knife blade 2 ins. thick with a corresponding construction behind it would have led to a weight that was impracticable, but the wheel as actually built is immensely strong and radically different from those previ

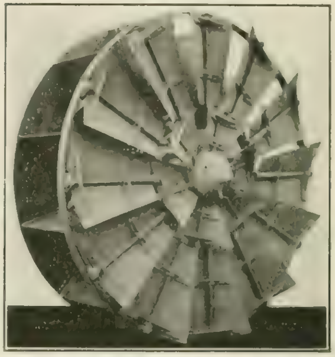


Fig. 2.—Square Fan Type of Early C. P. R. Snow Plow.

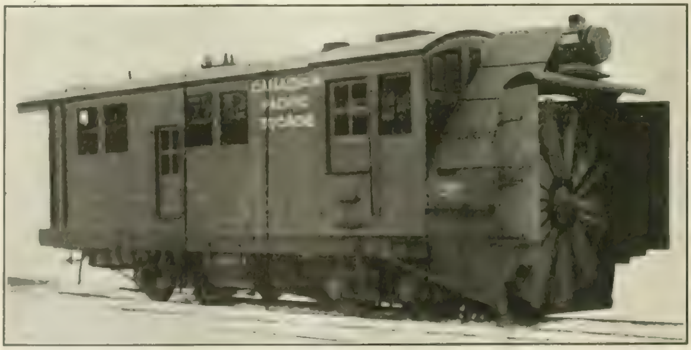


Fig. 4.—1911 Type of C.P.R. Snow Plow with Cut Wideners.

ously employed. The cone shaped scoops were formed from plates of ⅜ in. steel pressed into shape, and the hinges for the knife blades were riveted to their edges. To obtain the desired strength these plates would have to be increased to 1¼ in. or 1½ in., which would make them most difficult to form and necessitate the hinge castings being fitted to them individually as it could not be expected they would be absolutely uniform in shape. It was, therefore, decided to make the entire wheel out of cast steel, casting the hinges solid with the body of the wheel. As no machinery facilities or annealing furnaces were available for handling a casting of this size in one piece, the centre was made in octagon form, 80 ins. across the flats, with 8 segments bolted to it. Fig. 5 is a front view of the centre, which shows the cast steel hinges before machining. Fig. 6 shows one of the segments which are bolted to the faces of the centre. The hinges are 6 ins. in diameter at the largest part and the hinge pin 2½ ins. in diameter. The bottom holes in line with the hinge holes are for the 2¼ in. bolts which secured the segments to the centre. There are three of these bolts in each segment, one in line with each hinge hole and one central between the hinges. There are also 5 bolts, 2 ins. in diameter at the rear edge of the segments, and they are also bolted together through the flanges at their rear edges. It was necessary to make the fastenings between the segments and the centre of ample strength, not only to stand the shocks at the edge of the blade but the effect of centrifugal force, which at 400 revolutions a minute, the estimated maximum speed, was equal to about 275 times the weight on a diameter of 11 ft. The face of the segment bolts to the centre, each segment containing one pair of hinges and the halves of the two scoop shaped compartments. Fig. 7 is a view of the wheel assembled before the knives are attached. This view shows the band, 1¼ in. thick by 10 ins. wide, which further secures the segments in place. This band is made in sections with L shaped lugs on each end, which fit in grooves cut in the segments (see fig. 6), and is also securely bolted to them. It is increased in thickness to compensate for the holes for the hinge pins and bolts. This view also shows the bolts attaching the segments to the centre and the stops for the knife blades. Fig. 8 is a view of one of the blades from the inside, and shows their massive construction. There are three hinge pins, 1⅜, 1⅝ and 2¼ ins. in diameter respectively. The hinges on the wheel and on the knives are sufficiently strong to shear these pins, and it was calculated that to shear the outer pin, which is the one exposed to the greatest strain, would require 400 tons at the edge of the blade. The knives are ⅝ in. thick at the edge and heavily ribbed, while the stop extends from end to end and forms a strong backbone.

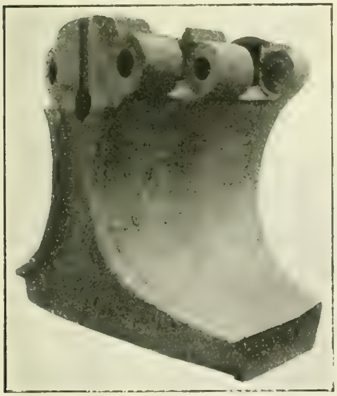


Fig. 6.—Cutter Head Segment of New C.P.R. Snow Plow.

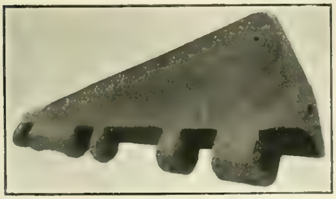


Fig. 8.—Cutter Blade of New C.P.R. Snow Plow.

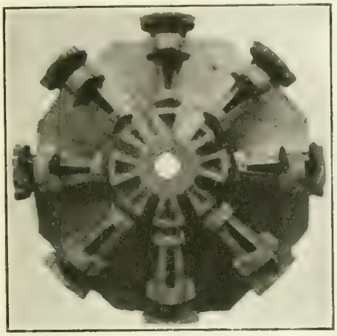


Fig. 5.—Centre Casting of New C.P.R. Snow Plow.

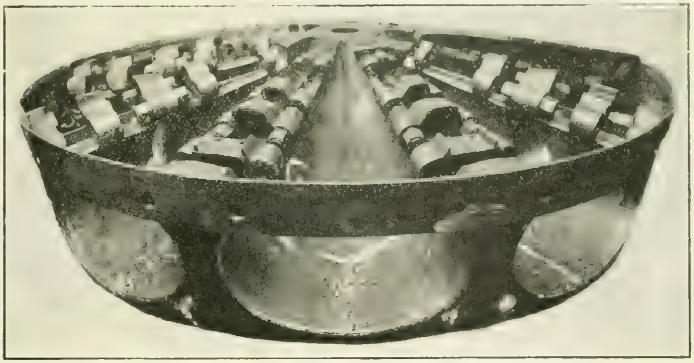


Fig. 7.—Assembled Cutter Head of New C.P.R. Snow Plow, Without Cutters.

Fig. 9 is the nose piece which completes the centre of the wheel. The completed wheel without the nose pieces, when being balanced in the shops, weighed 24,000 lbs., and on account of the high speed at which it was required to run it was necessary to balance it most accurately. This view also shows the links connecting each pair of knives to move the rear knife into the proper position. The machined surface near the link was to permit of the attachment of clips to hold the knives in their proper position, but these were not required when the proper length of link was obtained.

Fig. 10 is a view of the plow partly assembled, but before the wheel was applied, and shows the general construction of the casing. This was made of [illegible] plate in two tapered courses, the front one being tapered 1 in. [illegible] in 4. In place of making the front of the casing in a vertical plane, the taper course was cut away to bring its cross section to the shape required. By adopting this plan all flat surfaces which might lead to the formation of ice were avoided. The front casing is reinforced by a second thickness of ¾ in. plate along its lower front edge, and heavily braced with tee irons. The back of the casing is constructed of steel castings, having flanges for attachment to the gusset plates, which are securely riveted to the frame. This view also shows the taper wheel fit of the main shaft, which is 11⅛ in. diameter and 12 ft. 2 ins. long over all. The front bearing is 11⅛ ins. diameter by 28 ins. long. Behind this is a marine type thrust bearing having 10 collars and a rear bearing 10 ins. diameter by 16½ ins. long. The thrust bearing was introduced on account of the conviction that the arrangements for taking the thrust were inadequate on the older plows, and in their case the thrust was actually taken by the sheet of ice which formed between the plow wheel and the casing. This has been justified by the results as the plow running very freely on heavy cuts. On the rear end of the main shaft is a crank disc connected to the crank pin of the engine by a drag link coupling. This was used in case of any variation between the alignment of the main shaft and the engine crank shaft and to prevent any bending strains being transmitted from one to the other. On one plow there is actually a difference of ¼ in. which is easily taken care of in this way. The engine is of strong but light construction, the cylinders 20 ins. diameter, 24 in.

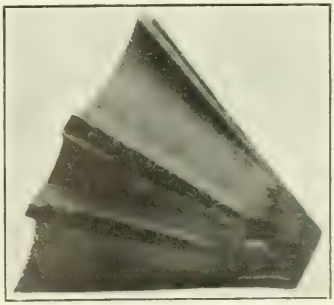


Fig. 9.—Cutter Head Nose Piece of New C.P.R. Snow Plow.

stroke, are of grey iron cast in one with the steam chest and bolted together. The columns are of cast steel and their shape was carefully worked out. On account of head room the length of connecting rod is very short in proportion to the stroke, only 1.87 to 1, which required ample bearing surface in the crossheads. This feature has, however, given no trouble. This view shows the reverse lever and throttle, which are in duplicate, so that the plow may be operated from either side. On the casing can be seen the steady block arrangement. This comprised a shoe on either side of the casing which can be forced down on the rail to steady the plow when taking heavy cuts. It is operated by an air cylinder, but this has not proved satisfactory and is to be changed to a hand lever.

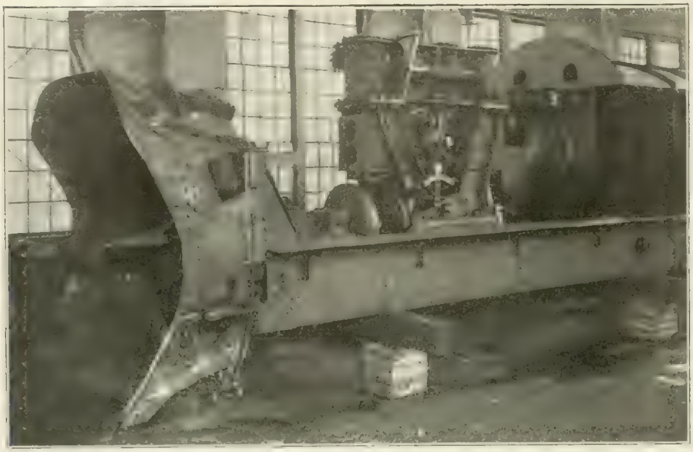


Fig. 10.—New C.P.R. Snow Plow, Partially Assembled, Showing Cut Widener and Driving Engine.

The frames are box girders 36 ins. deep at the front end, the outer plate being ⅜ in. thick, the inner ½ in. The top and bottom flanges are 13 in. ship channels, and the frame is carried back full depth to the boiler saddle where it tapers down to 18 ins. deep at the back end. This view also shows the heavy steel front casting the [illegible] in. plate which connects the frames together at the bottom and the shaft bearing and engine supporting angles.

There is a crank pin in front for the drag link. The pins are hollow and in many respects weight has been saved as much as possible. The valve in the centre of the operating platform is the engineer's valve of the Westinghouse air brakes, and the one above is the straight air brake valve. The other valves control the flanger, ice cutters and steadying blocks, all of which are operated by compressed air. The slides in the centre carry the bracket for the electric headlight, which can be lowered down into the cab when required.

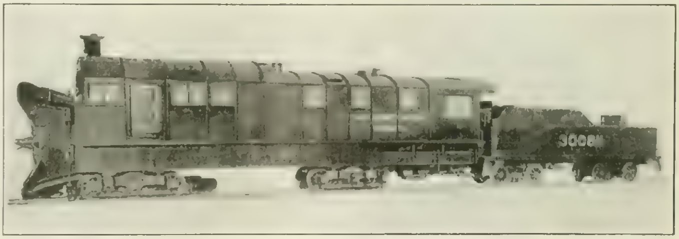


Fig. 11.—General View of New C.P.R. Snow Plow.

The boiler applied to these plows is similar to that on the C.P.R. class M. 4 consolidation locomotives, with the exception that the superheater was omitted. It was thought that as the plows would only be used a few times each year the economy resulting from superheating was important, while the possibility of the apparatus leaking or not being perfect order when required would be objectionable. The boiler contains 2,108 sq. ft. of heating surface and 44 sq. ft. of grate area, and carries 200 lbs. pressure. It is, therefore, of far greater capacity than any previously employed on this class of work. The trucks are of the six wheel type, but of special design, having cast steel frames. The axles are the M.C.B. 50,000 lbs. standard with 7 by 12 in. journals, and the wheels 34 in. diameter with steel tires. On account of the plow having no centre frames, but simply two main longitudinal girders, no weight is carried on the centre plates, which are used simply to guide the trucks, and the weight is carried on sliding surfaces located between the side frames of the trucks and the plow girders. On account of there not being sufficient room the usual type of truck equalizer could not be applied, and underhung equalizers are used which bear on pins in lugs cast on the boxes. To save weight the end pedestals are dispensed with and the frame is formed with guides, which engage with grooves on the journal boxes. This design of truck is exceedingly light for its strength, and with certain exceptions that will be referred to later, has proved satisfactory. The general appearance of the plows is shown in figs. 11 and 12. Their size may be judged from the frame being 48 ft. 4 in. long over all from the casing to the rear end. They weigh 260,000 lbs. in working order, the weight being practically equal on the two trucks. The cab or covering is of steel and is smooth inside, the angles and braces being on the outside to avoid injury to the men in case of derailment. The tender attached to the plow has a capacity of 7,000 gals. of water and 16 tons of coal. It was made specially long, 32 ft. over end frames, in order to separate the weight of the plow from the engines pushing it on account of bridge limitations. The tender trucks are inside bearing four-wheel equalizer pedestal trucks, this design being adopted to use engine truck wheels and axles of standard types.

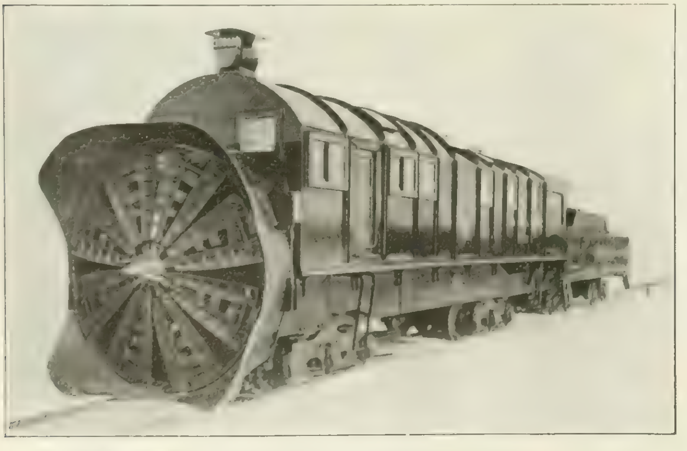


Fig. 12.—General View of New C.P.R. Snow Plow, Showing Arrangement of Cutter Head.

The design of these plows was commenced in July, 1910, and a considerable amount of preliminary work was required before it was possible to decide on the general plan that would be practicable. In addition it was desired to apply the new type of wheel and casing to several of the older plows in service, and in order to do this in time the design of the wheel had to be completed before the balance of the work was taken up. About Oct. 1 it was possible to prepare an estimate of the weight of the complete plow, when it was found that it would greatly exceed the limits that had been allowed by the Bridge Department. The wheels, which were constructed at the Argus Shops, were by that time partly completed, so that it was necessary to revise all the other drawings and practically redesign the entire plow. In fact, there was hardly a pattern or a drawing that did not require making up anew, with the exception that the only alteration of the boiler was to shorten the barrel. In spite of this delay, the first plow was completed by the Montreal Locomotive Works on Jan. 8, 1911, and the second one a few days later, a remarkably quick piece of work in view of its size and every part being entirely new in design.

It is difficult to say whether these plows have proved entirely satisfactory in service. From the time they arrived in the mountains there has been no trouble with snow that would test their capacity. They have been run through a drift of hard packed snow about 250 yards long without slowing down, and pushed by one engine in place of requiring two, as would have been the case with the old plows. This indicates that they have ample power and steaming capacity. One of the C.P.R. western officers states that they will cut trees 4 ins. diameter, but they have not been tried on anything heavier. Last season the man in charge, while going through a cut, felt a jar and saw a car coupler which had been left in the drift, thrown out to one side. The only damage is reported to have been a semicircular piece about 2 ins. in diameter broken out of one of the blades. With these exceptions, it has been difficult to obtain any definite reliable information. The plows do, however, work exceedingly well. There is an entire absence of the noise and vibration which makes the operation of a bevel gear driven rotary so unpleasant. The plows are so strongly constructed that it is difficult to see how any obstruction could injure them, and from what experience has been obtained, it is expected that they will be of great assistance in keeping the road open under any conditions.

The only trouble that has been experienced is through derailment. When the track is badly heaved, one spring on an equalizer may be compressed until practically solid and thus change the actual fulcrum of the equalizer. This has been overcome by placing a seat between the springs and the equalizer to ensure a constant point of application of the load and placing springs between the truck frame and the supporting plates. These were required on account of the small amount the plow frame can be twisted. When supported on one side only the opposite side was found to be ½ in. lower. This shows the stiffness of the frame construction and explains why additional spring movement was necessary to compensate for the irregularities of the track.

While during the past few years the tendency has been to depend on wedge plows rather than rotaries for the general work of clearing away snow, still the rotary is called on when the limit of the wedge plows is reached, and for work they cannot safely attempt. The energy and perseverance of the Leslies led to the practical development of the rotary snow plow, and they deserve a great deal of credit for furnishing the railways with a machine that has rendered winter operation possible.

The foregoing paper was read before the Canadian Society of Civil Engineers recently.

The Economics of Railway Location.

By W. F. Tye, M. Can. Soc. C.E.

When looking around for a subject my thoughts turn naturally to railway location on which a great part of my professional career has been spent.

Transportation is one of Canada's greatest problems: our country is of vast area, the distances are great, the population sparse, and the traffic light; making the mileage and cost of railways high per head of population. On the other hand the growth of the country is and will continue to be rapid. A great problem is thus presented: how to build our railways that they may not be too expensive for our present requirements, and yet be capable of improvement to fit our future needs. Economics of railway location is, therefore, of even more than usual importance to Canada. The subject is so vast that it is only possible in such an address to touch its outer fringe; but it is so important to us all that even a few rudimentary remarks may be interesting.

While railways are built to serve the traffic requirements of the country, the immediate object of the promoters and builders is to make a profit, either on the construction or operation. This is undoubtedly true when built by private parties. When built by a government, it is with the end in view that the people may make money either directly through the operation of the railway, or indirectly by the reduction of rates. It is, therefore, of prime importance that the engineer, whether he be working for private parties or for a government, locate and construct the most economic road. The most economic road is not necessarily either the cheapest or most expensive, neither is it necessarily the one which may be operated at the least cost—it is in reality the one which is the most effective commercially, or the one which will enable its owners to transport the largest amount of traffic at the lowest cost.

In order to ascertain that a railway is most effective commercially, the features which underlie its commercial effectiveness should be understood. There are:—Gross earnings, operating expenses, and fixed charges; and are of importance in the order named. Gross earnings, which depend on the amount of traffic handled, is undoubtedly first. It is never advisable to build a railway unless there is or will be sufficient traffic to pay the operating expenses and the fixed charges, no matter how cheaply or how well it can be built.

In new countries, such as most Canadian railways are built through, there is rarely sufficient traffic in sight to justify the construction of a road, so the promoters—whether they be a government or private parties—must have faith in the project and must be able to justify to themselves, and to the investing public, the possibilities of paying dividends.

Engineers are sometimes, though rarely, consulted in the early stages of the project to report on the traffic possibilities of the route. The usual way is for the promoters to decide for themselves that a road between certain terminals is commercially desirable, and that there is or will be sufficient traffic on such a route to justify its construction. Engineers are then employed to survey and construct the road. The question should at once arise with the engineer—how the railway can be so located as to make it the most effective commercially, or how to get for the promoters the most profitable traffic. No matter how this problem is stated, it finally resolves itself into this: if the promoters be private parties, how can the road be so located and built that the most interest can be earned on the money invested or, if a government, to transport the most traffic at the least cost? The answer in either case would be the same, for, if it is so located that it may handle the most traffic at the least cost, it will, if properly managed, make the most interest on the money invested.

The first problem the engineer has thus to face is how he can so locate the road between the given terminals as to get the most profitable traffic. The route which takes in the greatest number of towns, or which goes through the best land, if the country be unsettled, should be the first examined. A mistake frequently made is to locate the road within a mile or two of an important town in order to decrease distance or avoid expense. The cost of handling traffic is the total cost from the door of the consignor to the door of the consignee, and rates on that basis must be equal. The added charge for cartage is at times so large as to wholly destroy the business of the badly placed line and give it to a competitor more favorably situated, or if it be not wholly destroyed, the additional cartage and delivery charges eat up the profits.

Where traffic is light, and train loads less than the rated capacity of the locomotive, the cost of handling additional traffic is much less than is the ordinary train mile cost. It should be figured in equating the value of a change in location which increases traffic at 50% of the usual train mile cost. In this respect it should be remembered that deviations from the direct route do not always materially add to the length of the line.

In order to locate a railway so that it may be commercially effective it is first necessary to know what the volume of traffic is likely to be, whether it is immediately available, and at what rate it is likely to grow. The best way to ascertain this is by comparison with roads through the same or a similar country. A road through a country most nearly approximating that to be traversed should be selected for examination, and its traffic for previous years studied. If, for any reason business is likely to be materially greater or less than on the road under examination, due allowance should be made.

All railways are now required to make yearly reports to the government, and such statistics should be examined as well as those published in the railway companies annual reports. The average train load and the ruling grade should be studied, and finally the average number of trains per day should be ascertained. It must be remembered that though the traffic is rarely balanced, that is, that there is seldom as much tonnage moving one way as the other, the number of trains each way must within narrow limits be the same. It is not always easy for an outsider to ascertain the number of trains over any given railway, as railway statistics are not published in this form, but every effort should be made to arrive at it as closely as possible.

Having obtained this information, and having determined how the traffic on the proposed road will compare with that on the road under examination, some approximation of the ruling grades on the road in view should be arrived at. If different from those on the route with which comparison is being made, the number of trains per day each way on the proposed road should be increased or diminished accordingly.

While this method of ascertaining the number of trains per day is only approximate, it is certainly much more accurate than to attempt to make an independent estimate of the gross tonnage on the new road. The rate of growth of traffic should be similarly ascertained, as a railway should be built not only to take care of the present traffic but also that of the road in the reasonably near future.

Cost per train mile is the basis of all economic comparison, as the effect of the number of trains on the cost of operation is much more direct than is the actual tonnage handled. The cost per train mile should thus be ascertained with reasonable accuracy. The annual reports published by the railway companies usually give these figures: if not, the reports of the Inter-State Commerce Commission give this information for every railway in the United States. From this mass of statistics the train mile cost of the most nearly similar road should be taken and assumed as the train mile cost of the proposed road. It must also be remembered that these costs are increasing rapidly, the average for the whole United States for the year ended June 30, 1896, being 95c., while for the year ended June 30, 1910, it had increased to $1.49.

Equipped with this information as to the sources of traffic, the estimated average number of trains per day, and the probable cost per train mile, the engineer is ready to make a reconnaissance of the country to be traversed. The reconnaissance should always be of an area rather than a line. An area wide enough to take in any possible line should be examined. All combinations of probable lines should be studied. As the reconnaissance proceeds a map of the country should be made showing the details of the topography by contours 10 to 50 ft. apart: the elevations of controlling points should be shown with the greatest attainable accuracy. From such a map carefully prepared all lines and combinations of lines can be studied. Approximate condensed profiles can be drawn, and distances, grades and costs can be approximately ascertained. With such information, the choice of routes can usually be narrowed down to one or two, or in rare instances to three lines over which it is necessary to run surveys.

The value of a proper reconnaissance cannot be too strongly insisted upon. It is owing to the lack of it that the graver errors of location are usually due, such as the selection of an improper route or ruling grade, passing of traffic centres, etc. There [illegible] money can be so profitably spent. Great pains should be taken to secure the most expert engineer for this class of work. In engineering and economic importance, reconnaissance far outranks location or construction. It is not an exaggeration to say that for every dollar which an engineer can save on construction, he can save five on location, and ten on reconnaissance.

The really essential factor in a location made for freight traffic is the ruling grade. The maximum is not always the ruling or limiting grade, as it might be operated by the aid of a helper engine, in which case [illegible] grade of a lower rate may, by taxing the boiler capacity, become the ruling grade instead of [illegible] the economic value of any change in grade, or to compare two different grades, the number of round trips per day required to handle the estimated traffic should be ascertained. The difference will be the saving [illegible] train mile by twice the length of the division in miles and the number of days in the year, will give the annual saving. Capitalizing at the proper interest rate will give the capitalized value of the better grade. If the additional cost is not greater than the capitalized value when properly equated for distance, rise and fall, curvature, etc., then the lighter grade is an economic one, and should be adopted.

As many items of expense will not be affected by changes in the number of trains, the saving per train mile for a train eliminated is not as great as the cost per train mile for the entire traffic. The saving is in reality in the neighborhood of 50%, and this percentage of the ascertained total train mile cost should be used in estimating the economy due to a difference in ruling grade.

In figuring on the economics of a grade reduction on an old road where the traffic and the average number of trains per day are known, it is essential that the actual loads hauled by each locomotive be determined and compared with their rated capacities. This difference is due to the inability of the operating officials to get perfect results. This "personal equation" must be taken into consideration in figuring the number of trains per day with the new grades, as they will no more be able to get the best results under the new conditions than they were with the old. In making a reduction from a high rate to a low, for instance, from 1% to a 0.3% or 0.4%, it must not be forgotten that the proportion of the actual loads to the theoretical rating will be lower on the low grades than on the high. Time is an essential factor. On a 1% grade in good weather, the actual loading may usually be made 90% of the theoretical, while on 0.3% it is unlikely that more than 75% of the rating can be hauled if time is to be made.

The proportionate amount of ruling grade on the divisions has also an important bearing on the loading of trains, the greater the proportion its length bears to the length of the division the lighter the actual train loads must be, and this, too, must be taken into consideration in determining the average number of trains per day required to handle the traffic on the proposed new grade.

Serious error would undoubtedly arise if the theoretical number of trains required to handle the traffic on the proposed new grade were compared with the actual trains on the present one.

While fixed charges which are largely determined by the cost of construction—are of lesser consideration than operating expenses, they are still of prime importance. No road can pay dividends to stockholders, or afford to reduce freight rates until its fixed charges are met. So it is of the greatest importance that the engineer introduce no features that will increase the cost of construction without reducing the operating expenses by at least as great an amount as the interest on the added cost. The cost of moving a given tonnage being the sum of the operating expenses and the fixed charges, it follows that a reduction in the cost which does not increase the operating expenses is only of less importance than one which reduces the operating expenses without increasing the cost. Such [illegible] improvement to the standard of the road, as it [illegible] expenditures and so permits of an increase [illegible] dividends or has a tendency to permit of a reduction in freight rates, if that be the object aimed at.

[illegible] new construction is through districts which at the time of construction furnish but little traffic; much railway has been built on which the traffic did not justify even one daily freight train per day each way. It is a safe statement that 80% of the mileage constructed in Canada would not furnish at the date of completion traffic sufficient for two freight trains each way per day. Under such conditions, the receipts are low and the operating expenses high, and it is of the utmost importance that the construction cost be kept low. On the other hand, the country is growing fast, and traffic is increasing rapidly. It is thus necessary that the engineer keep always in view the almost certain necessity of a good road in the future. He should, therefore, so locate and construct his line that the first cost be low, and that the standard may be raised, when necessary, without unduly increasing the total expenditure. In order to get the very best results, the line giving best grades, alignment, etc., should always be first located. From this, as a standard, the engineer should work to the final or economic location. Working from a poor to a better is apt to lead to grave errors.

Where low construction costs are necessary, and it is probable that a high standard will be required in the future, it is much more effective and advisable to use short sections of temporary line with steep grades, sharp curves, etc., on the heavy or difficult sections, maintaining the higher standard for the light or easy portions of line, than it is to adopt a generally lower standard for the whole route. The first cost of the former will probably be less; it may be operated with helper engines as the traffic increases, and may be improved when advisable, while the cost of improving a generally poor road is frequently prohibitive.

The use of sharp curves with short tangents is often a very effective means of reducing cost without materially increasing the operating expenses.

The effect of moderately sharp curvature is essentially different from steep grades, inasmuch as it is not limiting in its effect. The use of one sharp curve does not justify the use of another just as sharp, whereas the use of one ruling grade on a division does justify another as steep.

The use of curves up to 14° does not increase the maintenance or operating expenses. A mile of road in which there are 100° of 10° curve, the balance being tangent, does not cost any more to maintain and operate than the same length of road with 100° of 2° curve—in fact, if there is any difference, it is in favor of the sharper curvature.

Unless the curvature is so sharp as to be limiting in its effect, there is no serious objection even on the best class of road to a few sharp curves where the amount saved by their use is sufficient to justify their introduction. The conditions which cause curves to be limiting are when they are so sharp as to prevent the use of the higher grades of modern equipment, and when they limit the haulage capacity of the locomotives, or their speed.

Modern equipment is so constructed as to traverse safely 14° curves, and much sharper with guard and hold up rails. The standard compensation for curvature on grades is 0.4 ft. per degree. A 10° curve is thus equivalent, as far as resistance is concerned, to a 0.4% grade; and a 15° curve to a 0.6% grade. On a 0.4% it is only necessary that the grade on a 10° curve be made level in order that the resistance be not increased. The same thing applies to a 15° curve on a 0.6% grade. It is, therefore, evident that on a road whose ruling grades are 0.4% 10° curves are not limiting to the haulage capacity of the locomotives, nor are 15° curves on a 0.6% grade.

The easy riding speed is dependent on the amount of the allowable elevation of the outer rail. If the maximum be set at 6 ins., this speed per hour would be:—

on a	3	degree curve	60	miles an hour
"	4	"	50	"
"	6	"	40	"
"	8	"	35	"
"	10	"	30	"

The safe or allowable speed would be 10 miles an hour greater.

With the track properly elevated, equipped with tie plates kept in good line and surface, and curves provided with proper easements, 10° curves are no more disagreeable to ride over at speed of 30 miles per hour than are 3° curves at 60 miles an hour.

The reduction in speed for one mile from 50 to 30 miles an hour only means the loss of 0.8 minutes. To take an extreme case — the Twentieth Century Limited runs from New York to Chicago, 980 miles, in 20 hours, or at an average of 49 miles an hour. The introduction of one hundred 10° curves, each one of which required a slacking of speed to 30 miles an hour for a distance of one mile would increase the running time of such a train by 80 minutes. Such an increase on a road 1,000 miles long would in nine cases out of ten have no ill effect. A 10° curve so long as to require the reduction of speed to an average of 30 miles an hour for a mile would in practice be a very rare occurrence.

It is evident the use of curves as sharp as 10° does not prohibit the employment of modern equipment or limit the haulage capacity of the locomotives. It has no effect on the speed of freight trains, or on passenger trains where the average speed including stops is not greater than 30 miles an hour. A few such curves only slightly affect the running time where speeds are high.

It is thus clear that a few curves not sharper than 10° are not objectionable on the very best roads where their use results in large savings. As they are not limiting, the use of one such curve is no justification for a second. The introduction of many of them, preventing the employment of high speeds for long distances, would certainly be objectionable, but an occasional one where large savings result is justifiable on even the highest class of road.

Wooden trestles to replace heavy rock borrow embankments should be used. Such trestles may be designed to safely carry the heaviest class of equipment. When protected by the installation of the best available water supply they are quite safe, and are good for ten years. Such temporary construction also gives time to ascertain the correct requirements for water ways in new countries where there is frequently a dearth of information as to rainfall, flow of streams, etc., and where unless unduly large water ways are left there is danger of washouts. This danger may be even greater than the danger from fire to wooden trestles. Their use instead of heavy rock borrow embankments is of great importance from an economic point of view. One dollar at 5% compound interest amounts in ten years to $1.63. If rock borrow costs on the original construction say $1.75 a cubic yard it will in ten years' time have amounted with interest to $2.85, while, under anything like ordinary conditions train hauled earth embankments on an operated road, made when the trestles require replacement, do not cost over 30c. per cubic yard, or less than one ninth of the total cost of a permanent rock embankment made during construction.

Momentum grades are a great source of saving in cost, without increasing the operating expenses. The use of momentum in overcrowding short stretches steeper than the ordinary ruling grade is almost always justifiable. The exception is where the traffic is so congested that the possibility of a delay due to the failure of an occasional train to surmount the grade is more important than the undoubted saving in interest charges which they insure. It will probably be many years before conditions prohibiting their use prevail on any portion of our Canadian railways.

The foregoing are a few of the more important considerations which the locating engineer should keep in view. He should always remember that railways are commercial enterprises, are built for profit, and that the investors are looking for and are entitled to satisfactory interest on their money; and so far as the returns on their investments depend on location they will for a given traffic be the greatest when the sum of the operating expenses and fixed charges is the least amount.

The foregoing formed the principal portion of Mr. Tye's address, as retiring President of the Canadian Society of Civil Engineers, at its annual meeting in Montreal recently.

Canadian Pacific Railway Elevator, Etc., at Port McNicoll.

Canadian Railway and Marine World for Jan., 1912, contained a very complete illustrated description of the C.P.R.'s new Georgian Bay terminal at Port McNicoll, Ont., including a 2,000,000 bush. elevator built in 1910. The business proved too large for the elevator by the time it had been in operation for only one year, and it was therefore decided to build an additional storage unit of the same capacity as the original elevator, making the total capacity 4,000,000 bush.

C.P.R. Elevator, Power House, etc., at Port McNicoll.

The new storage unit, which was completed in time to be entirely filled with the 1911 crop before the close of lake navigation, is a duplicate of the first. It is 179 ft. wide, and 226 ft. long, making the new length of the elevator 452 ft. Each unit contains 32 cylindrical bins 32 ft. 11 ins. in diameter, and 31 interspace bins; the bin walls are 80 ft. long. The entire structure is of steel and concrete. The two marine towers, which travel alongside the original elevator, fill the new storage in the same manner as they filled the first unit. The longitudinal conveyors receiving from the marine towers run the entire length of the two units. Grain for shipment from the new portion is conveyed through the basement of the first storage to the car shipping house. All machinery is electrically driven, power being generated in a steam plant built in connection with the original elevator.

The work was carried out under the direction of J. M. R. Fairbairn, Assistant Chief Engineer, C.P.R., and C. W. P. Ramsey, Engineer of Construction, C.P.R., the contractors being the John S. Metcalf Co., Ltd., Montreal, and Chicago, who also built the first storage unit of 2,000,000 bush., as well as the car shipping house with a capacity of 200 cars in 10 hours, and also the following:—1,500 h.p. power plant, about 1 1/2 miles of wharves, flour shed, 700 ft. long, freight shed, 700 ft. long, Customs house, carpenter shop, coal platform, sleeping house and eating house for freight porters, pump house, fire protection and general water supply system.

Emergency Valve Locat on

The Board of Railway Commissioners at its sittings in Ottawa, Jan. 7, considered the advisability of standardizing the position of the emergency valve on passenger cars. In the course of the hearing, the standards of the different lines were outlined.

On the C.P.R., the emergency valve is located in the lavatory, with the handle extending out through the bulkhead, where it is readily accessible from the body of the car, meeting the contention raised that the valve and handle are both frequently located in the lavatory. On all cars over 60 ft., there is a valve in both ends, and on the mail, express and baggage cars, a communicating cord passes from end to end of the car in case the car should be filled up.

On the G.T.R. only one valve is employed, located in the women's lavatory, with the handle projecting through into the body of the car. When the valve is closed, the handle is in a perpendicular position, avoiding trouble from anyone hanging parcels on it and setting the brakes.

The Michigan Central places the valve in the men's lavatory, with the handle projecting through into the body of the car, a cord running through the car so that the valve may be operated from any position. In the latest type of car on that line, the whole valve is encased in metal to prevent tampering.

The Canadian Northern legal representative expressed the opinion that no objection would be raised to an order if it provided that the valve be located in the proper place where it could not be tampered with, and the handle be left accessible.

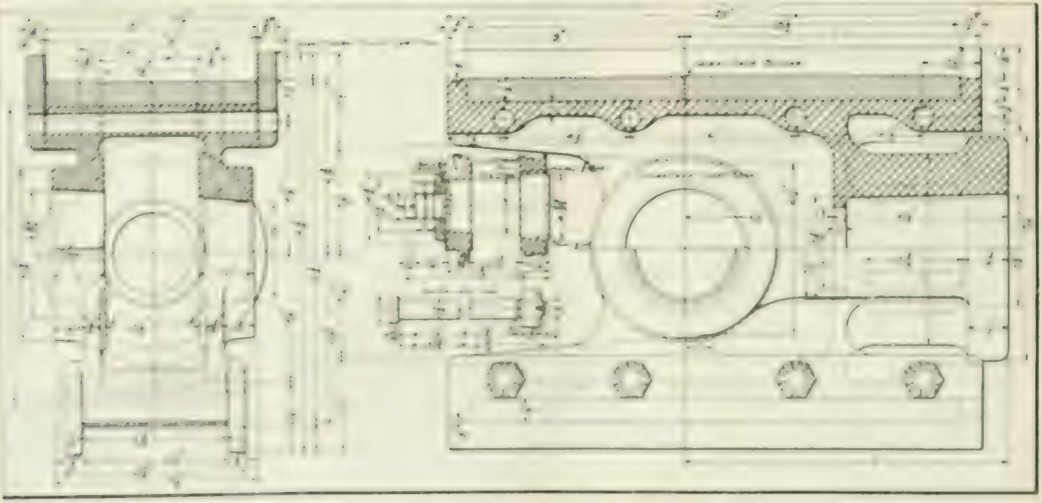
In view of the evidence submitted, the Chief Commissioner stated that there was no immediate necessity for action.

JOHN McCRAW, General Agent, Central Vermont Ry., New London, Conn., who was formerly in the Grand Trunk Railway service at Merritton, Ont., in remitting his renewal subscription, writes:—"To receive Canadian Railway and Marine World each month is just like getting a letter from home. I wish you continued success."

Improved Design of Canadian Northern Railway Locomotive Parts.

By [illegible]

[illegible]



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tional box type grate, with about one-third of the area air opening. The grate is composed of a series of ribs ½ in. wide by 3 ins. deep and tapered to ¼ in. to facilitate moulding. The 2 in. diameter trunnions supporting grate are offset ⅜ in. from the centre. This prevents the tendency of the grate to cock up and burn should shaker rods become disconnected. The grate is symmetrical and has two shaker arms, one of which can be broken off, depending on whether the bar is in the front or back end of the firebox. The bars in the fire door end of the box have the shaker on left side so that casting two arms on the bar avoids having a front and back bar.

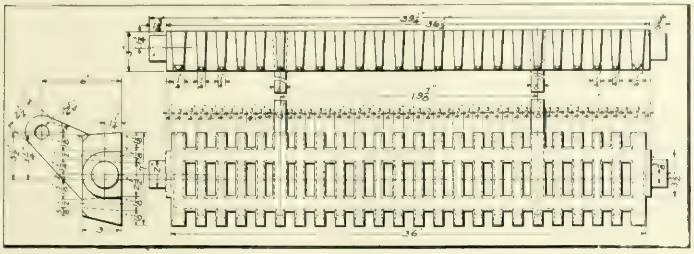


Fig. 2.—C.N.R. Standard Locomotive Grate Bars.

The side bearer bars are so designed that there is ⅜ in. play between the bearer and grate shoulders. The grates are arranged in the box, so that there is ½ in. clearance between the end sheet and back grate. The grate supports are 7½ in. centres, and any difference in length is thrown into the stationary grate at the tube sheet end of fire box. This end grate rests on bearer bars and is held in place by lugs and washers bolted to studs in the mud ring as shown in fig. 3. Experience in bad water districts has shown that a grate of this kind close up to the tube sheet prevents a flow of cold air up the front of the tube sheet and tends to prevent consequent tube leakage. The top edge of the end grate is tapered off and tends to prevent the lodgment of ashes and clinkers.

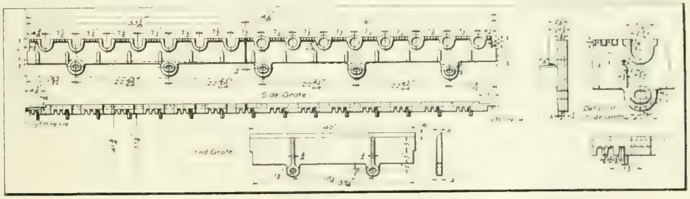


Fig. 3.—C.N.R. Standard Side and End Grates.

The bearers are made in four parts, and are supported by studs in the mud ring. The stud holes are slotted to facilitate fitting, and the bars are fitted snugly between the sheets by means of small fitting strips left in the ends, which can be easily chipped to suit. The trunnion supports are left open on the same side as the shaker arm on the grate (i.e. on the left side at the fire door end), and the small lugs adjacent to the grate support prevent the grate from falling out of line on account of the offset in the trunnion.

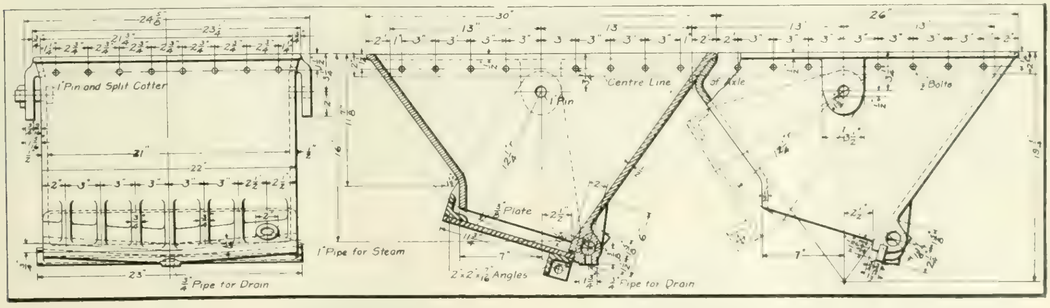


Fig. 4.—C.N.R. Standard Ashpan with Non Freezing Arrangement.

ASHPAN. The new C.N.R. ashpan, fig. 4, is quite a radical departure from existing practice, not only being inherently better in design, but also with the additional advantage of having a standard cast iron hopper, adaptable to all locomotives except the old standard types with shallow pans. The new law compelling railways to equip locomotives with some form of pan that would obviate the necessity of enginemen getting under the locomotive to clean the ashpans, led to the consideration of several designs and the final adoption of the design shown in fig. 4 as being the most suitable. The pan consists of one or more cast iron hoppers bolted to a superstructure of ¼ in. plate, which is fastened to the mud ring in the usual manner with studs and cotters. The necessary air vent, which should be one-seventh of the grate area, is provided by means of the C.N.R. standard air vent casting in the side and ends of the upper part of the pan. The whole arrangement is so constructed as to be readily removed when necessary. The hopper as shown in fig. 4 consists of two castings which differ only in the upper part of the back wall, which is arranged so that they may be bolted together as shown, when necessary. The bottom of the hopper is made from ⅜ in. plate bent up on each side, and suspended from lugs on side of casting. The front and back edges of the hopper bottom are reinforced by two angles, the back one forming a lip which sits up above outer back edge of hopper when in its closed position. The front edge of the swing bottom is the only part in contact with the casting, and in order to provide against freezing, a cored cavity has been run along the front of the hopper, through which steam may be fed from the pump exhaust or other supply, and condensation drained through ¾ in. opening at the centre.

The arrangement of lugs for the suspension of the hopper bottom with the centre of gravity of the bottom set out of the vertical line of the point of suspension, creates a tendency for the hopper bottom to remain closed, and this tendency is further augmented by the additional weight on the bottom, and the counterbalance on the operating shaft. The operating arrangement is quite simple, and is shown quite clearly in fig. 5. Cross rods through the front angle of the swing bottom, are fastened to rods which connect with arms on the operating shaft. Crank handles on each end of the shaft permit of ready manipulation by the crew, and the action of the counterbalance on the shaft, causes the bottom to close as soon as the operator releases the crank, which, it is hoped will overcome the occasional neglect of the crew in not closing the pan. An installation on an M-2-a consolidation locomotive is shown in fig. 5.

BLOW OFF VALVE. It frequently happens that the locomotive blow off valve is out of order from scale or other foreign substance blocking under the valve, causing the valve to leak more or less badly. With the ordinary type of blow off valve, it is necessary to drain the boiler in order to get at the valve for repair. In the type of valve in use on the C.N.R., such a procedure is unnecessary. Essentially, this valve is a double one, shown in fig. 6; one valve is a blow off and the other an emergency. The blow off valve itself is on a vertical spindle, and is similar in most particulars to the ordinary blow off valve, and is operated by a vertical rod from a fulcrumed lever under the valve. Between the blow off valve and the boiler, concentric with the boiler blow off hole, there is the other emergency valve, the blow off valve being offset from it in the same casting. This emergency valve is similar to the blow off, except that it is operated by a square threaded spindle, at the valve. Normally, this valve is set wide open, with the blow off controlled by the blow off valve. In the event of anything going wrong with the latter, the emergency valve can be closed, and the blow off removed and repaired, without the necessity of draining the boiler. When first applied, the valve was threaded into the side of the water leg, but since then, it has been found advisable to attach the valve by a flange, with a loose ball joint ring between, thereby forming a solid tight joint that will not turn in operation.

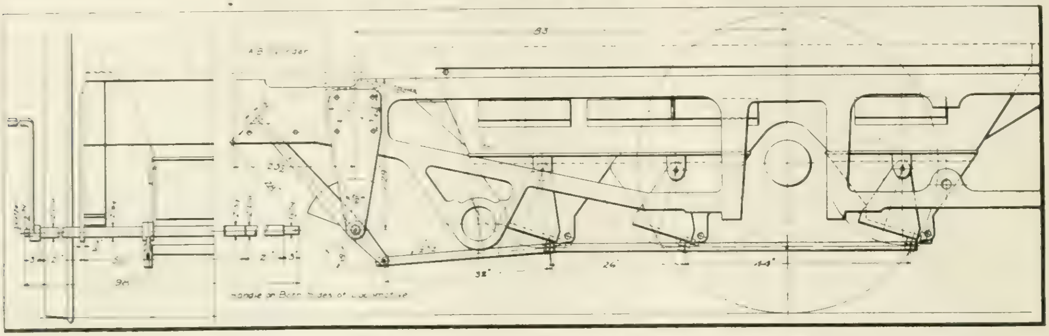


Fig. 5.—Installation of C.N.R. Standard Ashpan on an M-2-a Consolidation Locomotive.

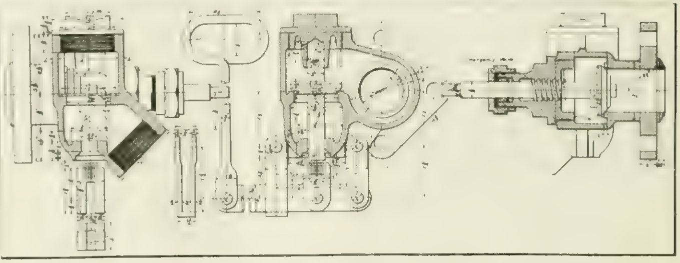


Fig. 6.—C.N.R. Standard Blow Off Valve.

GAUGE GLASS MOUNTINGS.—The design of gauge glass mounting used as shown in fig. 7 combines in a simple manner a convenient arrangement of fittings. The fittings to the boiler head are brass castings of almost identical design, except for interior coring of the glass space. In the body of each is a tapered packed valve, controlled in each case by a handle on the side. The end of the valve spindle has flat sides, on which a small clamp handle is fastened by a small bolt. The parts of the valve and handle are so constructed that the valve is open when the handle is in a vertical position. The gauge glass is held in the mountings at each end by packed glands. In the mountings, concentric with the hole into the boiler, are brass plugs, with a similar plug in the upper end of the top mounting. In the lower end of the lower mounting is a steel nipple for trying the gauge. It will be noted that the upper mounting is cored vertically slightly larger than the diameter of the gauge glass. In the event of the more or less frequent breakage of the glass, the procedure would be to turn off the valves, remove the top plug, and after drawing out the glass pieces, first removing the packing, a new length of glass is introduced from the top. After packing, replacing the top plug and turning on the valves, the glass is again complete for service.

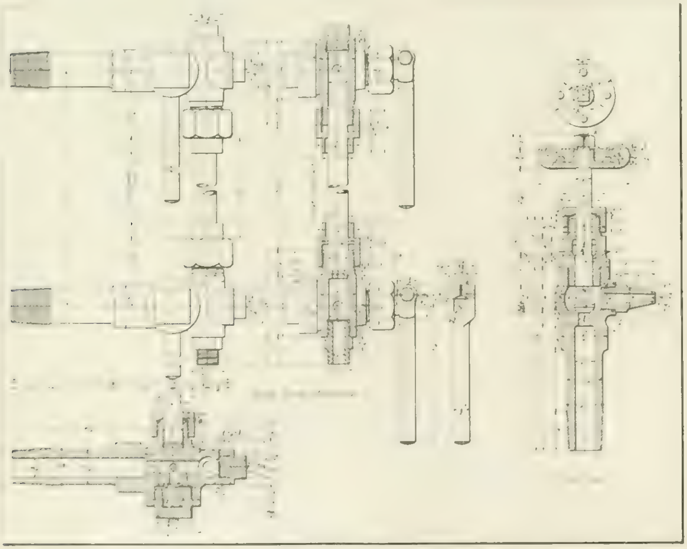


Fig. 7.—C.N.R. Standard Gauge Glass Mountings and Try Cock.

The C.N.R. standard try cock is also shown in fig. 7.

BELL STAND.—Forcing the feed water into the side of the boiler at the forward end has been the practice for such a long time that any departure from this plan seems unusual. So successful has the scheme worked out by Mr. Hungerford proved, that a number of other lines have adopted his plan in various modified designs. The feed water is injected into the boiler through the base of the bell stand, the latter being designed as in fig. 8. The feed enters the hollow sides of the bell stand through a vertical check valve, passing on through the hollow base into the boiler. Duplicate sets are arranged on each side. As with the blow off valve, if anything happens to the main valve, pressure must be drawn in order that the difficulty can be dealt with. Consequently, for similar reasons, an emergency valve is supplied on each side between the main valve and the boiler, both emergency valves being horizontal, alongside of the boiler connection. The bell stand is also provided with a plug in the top for washing out the boiler. Like the blow off valve, it is attached to the boiler top by a flange with a loose ball ring intervening.

The method of installing is shown in fig. 9, which graphically shows the principal reason for this method of boiler feeding. In the older method, with the injector in its usual location just above the boiler centre line, the feed pipe bends down, running along above the runboard, and then up to the check valve on the boiler centre line. In consequence, the feed pipe was always full of water, which in severe weather is a decided disadvantage, endangering the piping from freezing. With this new arrangement the feed pipe rises on a gentle slope to the bell stand, where there is an outside check valve in addition to the one in the casting. Immediately the injector is shut off, the pipe drains through the injector overflow, eliminating trouble from frozen piping.

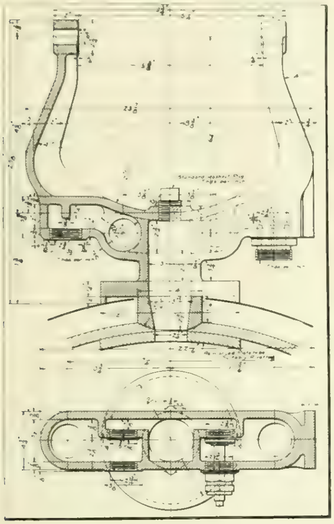
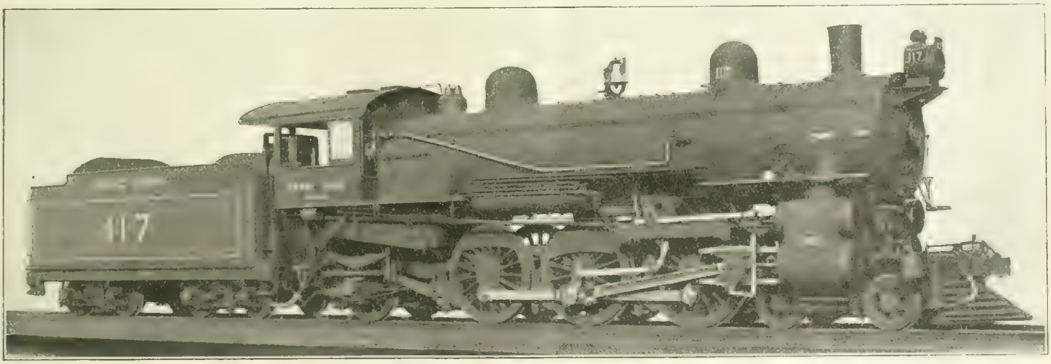


Fig. 8.—C.N.R. Bell Stand Feed Water Inlet.

Trouble would be experienced were the cold feed water to be fed in on the hot dry pipe, so a plate shield is mounted over the dry pipe on the inside of the boiler, shedding the water to each side. The edges of this shedding plate are bent up slightly, causing the water to spread out still further.


Grand Trunk Railway Pacific Type Locomotive.

The foregoing examples of recent locomotive practice will give a conception of the progressive policy adopted by the C.N.R. mechanical department. They are but a few of the many examples of refinement in design, but will serve as an example of what is being done in that particular by the youngest of the great Canadian railway systems.

Grand Trunk Railway Pacific Type Locomotives.

The G.T.R. has recently received 19 Pacific type locomotives which exert a tractive force of 33,800 lbs., and with 146,700 lbs. on driving wheels the ratio of adhesion is 4.34. The driving wheels are 69 ins. in diameter. The proportions of the design are such as to fit the locomotives for either fast freight or heavy medium speed passenger service. The advantage of the Pacific type over the 10 wheeled for work of this character lies in the increased relative steaming capacity of the former, and in the fact that, with a given amount of grate area, a larger furnace volume can be provided. This feature is of special value in locomotives using high volatile coal as fuel.

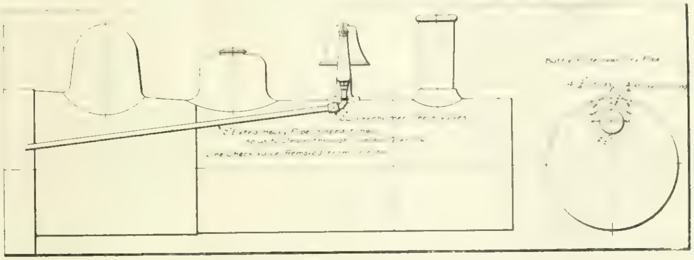


Fig. 9.—C.N.R. Standard Bell Stand Injector Arrangement.

These locomotives are equipped with a Schmidt fire tube superheater and also with a brick arch, which is supported on four water tubes. These features have fully proved their ability to raise the efficiency of the locomotive and increase its capacity per ton of weight; and the new locomotives, as far as their proportions and construction are concerned, represent the most approved practice for engines of their type.

The details have been worked out in accordance with G.T.R. practice, and except for the changes necessary because of the application of the superheater, they are closely similar to those of engines previously built for this line. The steam pipes pass out through the sides of the smoke box and the distribution is controlled by 14 in. piston valves. These are driven by Walschaerts gear and are set with a lead of 5-16 in The frames have single rails under the cylinder saddle, and separate rear sections which are arranged to accommodate a trailing truck with outside journals. All the driving springs are underhung, and every wheel under the locomotive and tender is braked.

The tender frame is composed of 10 in. steel channels, with oak bumpers. The trucks are of the arch bar type, with steel tired wheels, cast steel bolsters and triple elliptic springs. The fuel space is closed in front with metal coal gates.

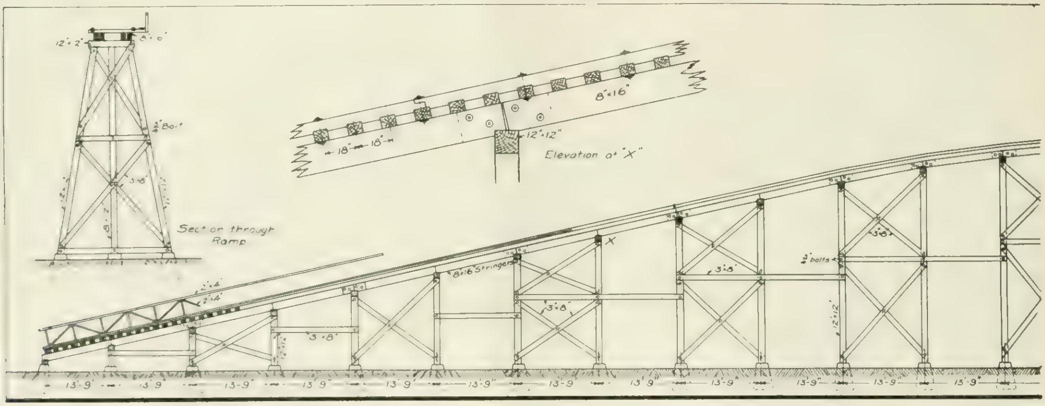
The locomotives were built by the Baldwin Locomotive Works. Their principal dimensions are as follows:

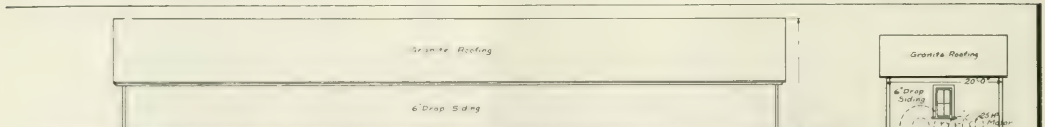
Cylinders	[illegible] ins.
Valves	balanced piston.
Boiler type	straight.
" " length	667/8 ins.
" " width	751/4 ins.
" " depth, front	72¾ ins.
" " depth, back	56¼ ins.
" " thickness of sheets, sides	⅜ in.
" material	steel.
" diameter	70½ ins.
" thickness of sheets	[illegible] ins.
" working pressure	185 lbs.
" fuel	soft coal.
" staying	radial.
Fire box—Material	steel.
" " thickness of sheets, back	⅜ in.
" " thickness of sheets, crown	⅜ in.
" " thickness of sheets, tube	[illegible] in.
Water Space—front	5½ ins.
" " sides	4[illegible] ins.
" " back	4½ ins.
Tubes material	steel
" thickness	0.150-0.125 ins.
" number	24[illegible]
" length	20 ft. 7 ins.
" diameter	[illegible] ins.
Heating Surface fire box	[illegible] sq. ft.
" " tubes	[illegible] sq. ft.
" " firebrick tubes	28 sq. ft.
" " total	2,826 sq. ft.
" " grate area	50.6 sq. ft.
Driving Wheels diameter, outside	69 ins.
" " diameter, centre	62 ins.
" " journals, main and others	9½ x 12 ins.
Engine Truck Wheels diameter, front	[illegible] ins.
" " " journals	6½ x 1[illegible] ins.
" " " diameter, back	[illegible] ins.
" " " journals	8 x 1[illegible] ins.
Wheel Base driving	[illegible]
" " rigid	[illegible]
" " total engine	33 ft. 2 ins.
" " total engine & tender	62 ft. 3½ ins.

Weight on driving wheels	146,700	lbs
" on truck, front	30,200	lbs
" on truck, back	38,200	lbs.
" total engine	224,100	lbs.
" total engine and tender	375,000	lbs.
Tender—wheels, number	8	
" wheels, diameter	34	ins
" journals	5½ x 10	ins.
" tank capacity	8,000	gals
" fuel capacity	10	tons.

1,000 Ton Coaling Station on National Transcontinental Railway at Cochrane.

The National Transcontinental Ry.'s coaling station at Cochrane, Ont., is shown in elevation in the accompanying illustrations. It is typical of the coaling stations building and to be built on the eastern section of the transcontinental line, the type being built on the G.T.P.R. section having been described in Canadian Railway and Marine World last August. The two types differ essentially, the latter having a pusher ramp while the former operates by power. The N.T.R. one is roofed, and the G.T.P.R. one open. Other details of design differ, the principal difference being in the distribution of coal pockets.





1,000 Ton Coaling Station on National Transcontinental Ry. at Cochrane, Ont.

The Cochrane plant is 112 by 30 ft., with a total height above ground of 60 ft., the coal car rail level being 40 ft. above ground. The structure is of wood throughout, and is supported on 10 by 10 in. posts, in sets of 4, at 7 ft. intervals the length of the building. The inner columns, 26 ft. long, are 14 ft. apart on concrete pedestals, 4½ ft. square at the base, calculated to support 62,560 lbs., and the other columns, 18 ft. long, on concrete pedestals 3½ ft. square at base, calculated to support 44,000 lbs. All piers are sunk to a depth of 5 ft. below the ground level. The inner two rows of columns slope together at the top directly under the two rails, with the outer ones forming the perpendicular sides of the coal pockets. The sides and ends of the coal pockets are sheathed with 2 by 10 in. planking, and the covered over top has 6 in. drop siding. The height to the under side of the coal pockets at the edge is 18 ft., rising in the centre on a slope of 1¼ to 1. The chutes along both sides are located 14 ft. apart, with a clear height above the rails of the coaling tracks of 14½ ft., 7½ ft. beyond the outer columns. The coaling tracks are 50 ft. centres.

The trestle approach ramp is supported on three rows of 12 by 12 in. wooden columns, the sets of three being 13¾ ft. centres. At the top of the ramp the outer column bases are 20 ft. 10 ins. apart, and at the lower end 7 ft. apart. All the piers are 3½ ft. square at the base. The ramp approach is steeper than in usual practice, which is made possible by the power hoist at the rear end of the plant. In a small cabin at this end of the plant there is housed a hoist, driven through gearing by a 25 h.p. electric motor. The coal cars are elevated on the platform up the steep ramp by this means.

The plant was designed by W. J. Press, Mechanical Engineer, N.T.R., from whom this information has been obtained. He claims for the plant the following advantages over the conventional design:—1. Elimination of liability of pushing locomotives or a string of cars over the trestle. 2. The building being under cover permits of the unloading of cars in all sorts of weather. 3. Man in charge can get any cars of coal that are on the track without awaiting the arrival of the switching locomotive and crew, and at times thus avoid running out of coal in the pockets, with the consequent delays in train movements. 4. More years of service for the trestle because it is not necessary to run a locomotive on it. 5. Saving of time and expense of switching locomotive and crew. 6. By having a hoist to move car when needed, it is unnecessary to lengthen the pocket beyond the length required for storage capacity, as is necessary with the standard design of coaling trestle in order to place a number of cars for unloading at one time, or at one visit of the switching locomotive and crew. 7. Saving of ground space by reducing the length of building and trestle by about 400 ft.

Railway Lands Patented.—Letters patent were issued during December, in respect of Dominion railway lands in Manitoba, Saskatchewan, Alberta and British Columbia, as follows:—

	Acres
Calgary and Edmonton Ry	643.00
Canadian Pacific Ry	4.77
Qu'Appelle, Long Lake and Saskatchewan Rd. and Steamboat Co.	3,214.59
Total	3,862.36

Railway Mechanical Methods and Devices.

Air Press at Grand Trunk Pacific Railway Shops

As mentioned on previous occasions, the G.T.P.R. shops at Rivers, Man., have been operating under peculiar conditions, from the fact that the work of a large system has been handled at a plant originally equipped for divisional work only. This has, however, been remedied, as the mechanical department of the railway has been removed from Rivers to the new shops at Transcona, near Winnipeg, which were described in Canadian Railway and Marine World for Feb., 1912.

The machine shop of the Rivers plant occupies the divisional machine and blacksmith shop space, crowding out all other departments. The blacksmith shop is housed in a temporary building alongside, of frame construction of the lightest and cheapest type compatible with accommodating the work with a fair degree of efficiency. As a result the interior arrangement is very cramped, requiring many makeshifts.

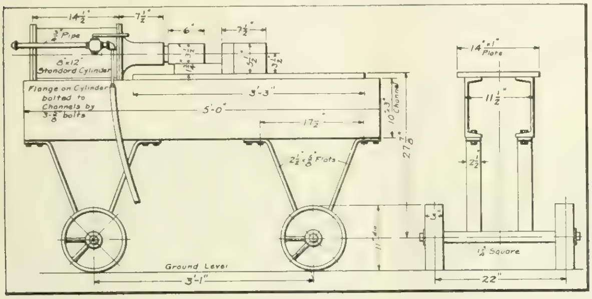


Fig. 1.—Portable Air Press for Light Bulldozer Work.

It was in consequence of this crowded condition that when it became necessary to build an air press as a substitute for a larger bulldozer, it was decided to make it portable, resulting in the press illustrated in fig. 1, which shows it mounted on a type of track. On two 5 ft. lengths of 10 x 3 in. channels is mounted a standard 8 x 12 in. air cylinder, bolted by its flanges to the flanges of the channels. On the other end of the channels is secured a flat plate, on the top of which are mounted the forging and bending dies or blocks. The air plunger is the actuating medium, controlled by a handle on the side of the cylinder. To the lower flanges of the channels are secured flat sections of forged bar stock, bolted to square stock, which form the axles of the carrying truck. The air press truck, when required, is drawn into position beside a vacant forge, and connected to the air by a hose length. When the work is completed the truck is drawn out into the yard and does not become an encumbrance. While particularly advantageous in these shops it is a suggestion that might well be taken up by many smaller shops, where the service of a bulldozer is only required part of the time.

Figs. 2, 3 and 4 show die blocks used in conjunction with the air press. Those in fig. 2 are for making hinges for Hart dump car aprons, the finished hinge being as shown on the right of the blocks. The stationary part of the mechanism is a cast iron block, in the centre of which is a vertical pin, the diameter of the hinge end loop. This stationary block is secured to the plate of the air press by two countersunk bolts. The movable block is of the collapsible type, comprising several parts that close together over the stock being worked. Two formed arms are pinned to the top of the stationary block, directly to the rear of the vertical pin in that block, with just sufficient intervening space to accommodate the stock when in position for bending. Two slotted links connect these arms to the body of the movable block, and as the latter moves forward, the pinned arms are forced in a circular direction, closing the stock around the vertical pin, completing the job in a single stroke.

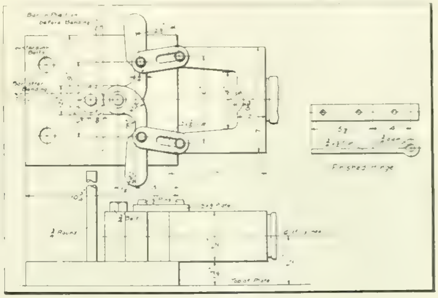


Fig. 2.—Hinge Forming Blocks for Dump Car Aprons.

Other forging jobs require more than one operation, as for example, the blocks for making hinges for end sill aprons on Hart box cars, as shown in fig. 3. The two operations are performed in the same blocks by moving from one position to another. The stationary block has a cutout in line with the direction of motion of the movable block, a tilt on the latter entering therein with the necessary stock clearance. The stock placed across the face of the stationary die is formed into a deep U, the diameter of which is slightly greater than that of the finished hinge pin. The U bent stock is then placed over a vertical pin in the stationary block, and the short end of the U flattened down on the other arm by properly formed recesses in the two blocks.

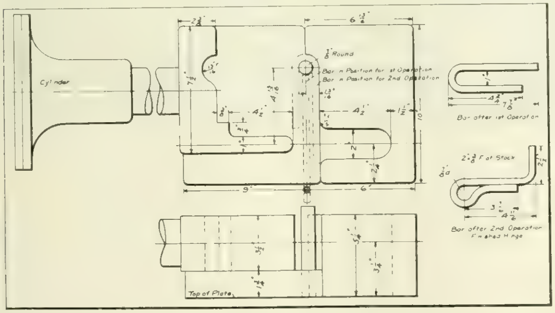


Fig. 3.—Hinge Forming Blocks for End Sill Aprons.

The operation of the blocks shown in fig. 4 is somewhat similar to the last example. The articles being made are corner brackets for box cars, and require two operations, both in the same pair of blocks. The bar stock, placed across the face of the movable die, is forced into a cutout in the latter by a correspondingly shaped triangular tit, leaving the bar with an initial double bend, approximately 90 and 180 degrees, with regard to the unbent end of the stock. This end is then placed in a groove in the movable block, and coming in contact with the face of the stationary block, becomes flattened to its final shape.

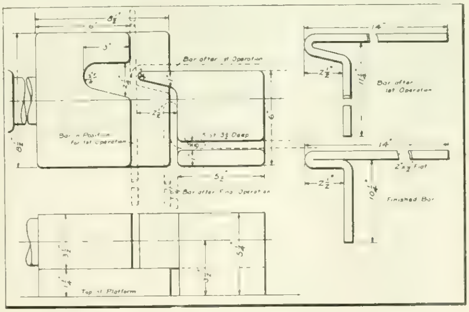


Fig. 4.—Box Car Corner Bracket Forming Blocks.

The Cost of Freight Car Maintenance on steam railways in the United States was reported at a meeting of the American Railway Association recently to have been 24.75 cents a car per day during 1911. This was divided between repairs, replacements and taxes, repairs costing 16.87c., replacements, including the charges which were made to renewals and depreciation, 6.78c., and taxes 1.10c.

Grinding in Dry Steam Pipe End at Grand Trunk Railway Stratford Shops.

In the G.T.R. shops at Stratford, Ont., there is a machine for grinding in the ends of locomotive dry pipes to the seat in the T head connection to the cylinders, which is the same in construction as one in use at the company's Battle Creek shops, from which it was copied.

The dry pipe to be ground in has a loop connection secured over the throttle end, as at the top of the illustration in fig. 1, by which the prone pipe is raised by block and tackle and suspended from the roof girder. From two vertical posts the pipe is held in position vertically by two bands near the lower end, the lower one of which is shown at the top of fig. 2. The grinding in machine is located directly below the suspended pipe, the details of the machine being as shown in fig. 2.

On a concrete foundation in the floor there is mounted a cylinder, with a vertical plunger displacement. The T head, into which the dry pipe is to be ground is mounted on a carriage on the upper end of the plunger, concentric with the dry pipe suspended from above. The upper end of the plunger rod has a flat surface, with groove for the securing thereto of two angle plates, one on each side to which the head is bolted.

To the right mounted on a casting, between the two posts, there is an air motor, the casting carrying a train of gears from the motor, reducing the motion at the crank which connects to the connecting rod leading to the left. Behind the cylinder and head in fig. 2 there is a vertical rod, with ball and socket connection both at top and bottom, the bottom connection being secured to the machine bed, and the top connection to the left end of the connecting rod leading from the crank on the end of the train of gears. A forked end on the far side of the table on which the head is mounted engages with this vertical ball joint rod. As the crank revolves an oscillating motion is given to the head and plunger in the cylinder.

On the near post, in the foreground of fig. 2, there is mounted an air valve of special design. On the forward end of this casting a combined ratchet wheel and cam wheel are mounted vertically in bearings. A short lever, with a dog playing on this ratchet wheel, oscillates on the same centre, actuated from a connecting rod driven from near the lower end of the ball and socket rod at the rear of the cylinder. Being near the stationary point of the rod, the motion is very greatly reduced.

The cam is the lower portion of the combined ratchet and cam, and in the side secured to the post there is a small plunger, part of an air valve. As the cam travels around from the motion imparted to it from the ratchet, the plunger is forced inward, and at a certain point on the circumference of the cam there is a drop, the plunger springing out by the aid of a spring in the base. This releases the air from the cylinder, allowing the plunger and head to drop into the position shown in fig. 2. The rise in the cam following this opens the air valve, permitting air to again enter the cylinder, raising plunger and head into contact with the dry pipe end, where it remains for a short interval, the oscillating motion, which continues concurrently, grinding the two together, oil and emery having been previously sprinkled on the mating surfaces in the usual manner. This action continues automatically without any attention on the part of the operator, the head rising into contact for a short interval, releasing for another short interval for the oil and emery to redistribute themselves, then into contact, continuing in this manner as long as the air motor is in operation.

The machine operates automatically, only requiring the occasional presence of an operator to feed in oil and emery.

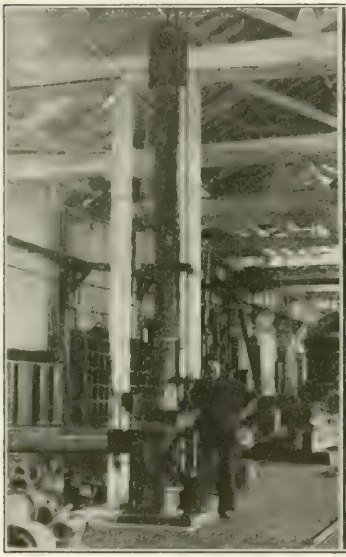


Fig. 1.—Dry Pipe Mounted for Grinding in.

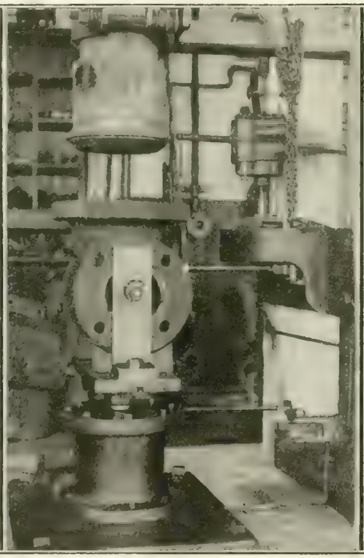


Fig. 2.—Mechanism for Grinding in the Dry Pipe.

The Board of Railway Commissioners will, on April 15, hear the application of the Montreal, Toronto, Winnipeg, and other boards of trade for reciprocal demurrage.

L. C. Fritch, Chicago, Great Western Rd., Chicago, read a paper on railway terminals before the Canadian Railway Club in Montreal, Jan. 14.

Pipe Bending Stand at Grand Trunk Railway Port Huron Shops.

In a car repair shop there is required considerable bent pipe, formed to the required shape. Some shops have pipe bending machines, but these are the exceptions. In other cases the pipe is bent to shape around pins located conveniently for the purpose, but such a practice has decided objections from the fact that if the bend is anyway abrupt a ruffled inner surface is the result. Applications of the method to be here outlined are to be found elsewhere, but rarely in so complete a form.

The method under consideration is used in the passenger car department of the G.T.R. shops at Port Huron, Mich., J. L. Hodgson, Master Car Builder. A 12 in. square oak post has been bedded vertically in a concrete foundation as shown in the illustration. To opposite sides of this post have been attached rolls of two different sizes, each of which will accommodate approximately different ranges of sizes, in the semi circular annular groove around the roll circumference.

The pipe to be bent is placed between the correct rolls, and bent to the required curvature. A sample of a piece of pipe bent to shape is to be seen in the pair of rolls on the nearer side.

In the background in this illustration there is shown a permanent scaffold, of a very convenient form. The scaffold posts carry projecting pins on each side, spaced about a foot apart. On one of these the scaffold plank rests, a bracket structure on the lower surface pressing back against the rung below. The scaffold can be raised or lowered on any pair of rungs for the work in hand.

Pipe Bending Stand.

The contracting firm of James Stewart and Co., New York, has been incorporated with a capital stock of $3,750,000. The firm of James Stewart and Co. was established in 1845 in Ottawa, Ont., by James Stewart, of Aberdeenshire, Scotland. In 1865 its headquarters were moved to St. Louis. The general office was changed in 1900 to New York.

Steam Railway Statistics for Year Ended June 30, 1912

The Table given in our last issue showed the financial results of the operations of steam railways for the year ended June 30, 1912. The following table gives the percentages and the principal statistical information compiled by the companies. The table published last issue and the one given below contain all the information given prior to 1910 in our compilation of these statistics, but the columns have been rearranged so as to combine in the first table the financial and in the second the statistical information.

Name of Railway	Proportion of total Passenger service train revenue to total earnings	Proportion of freight revenue plus switching revenue, &c., to total earnings	Revenue Train Mileage	Mileage of Non Revenue Trains	Earnings per Train Mile	Passengers Carried	Passengers Carried One Mile	Passenger Earnings per Train Mile	Tons of Freight Carried	Tons of Freight Carried One Mile	Freight Earnings per Train Mile
Alberta Ry. & Irrigation Co.	25.13	70.13	124,323		$ 3.08	74,215	3,011,316	$ 1.16	174,348	11,468,205	$ 4.52
Algoma Central & Hudson Bay	9.45	57.64	131,418	13,945	4.14	37,773	1,392,862	.62	444,285	14,594,790	4.14
Atlantic, Quebec & Western	44.49	55.41	39,892	1,791	.67	17,282	375,191	.32	15,470	528,832	.57
Algoma Eastern	1.66	97.16	19,181	62	5.09	4,031	41,618	.08	505,612	4,703,091	4.94
Bay of Quinte	20.09	76.45	197,689		1.20	108,128	1,594,922	.28	276,509	9,982,033	.93
Bedlington and Nelson	13.32	86.67	2,128		1.22	1,201	8,241	.16	80,553	3,795,513	1.07
Brandon, Sask. & Hudson Bay	36.01	63.40	66,232	1,290	1.25	27,977	930,129	.68	3,388	30,521	2.33
British Yukon	23.70	75.03	44,325	960	6.31	9,396	591,914	1.59	24,374	2,038,112	4.96
Brockville, Westport & N. W.	51.83	48.05	59.560	360	126	74,574	2,237,220	.67	30,596	1,009,668	1.22
Canada Southern	31.91	67.58	3,627,339	25,049	2.66	1,278,079	105,873,239	1.59	7,004,713	1,059,380,230	3.58
Canadian Government Railways											
Intercolonial	32.33	65.97	7,582,385	274,181	1.43	3,473,272	174,533,564	1.13	4,674,692	1,267,674,858	1.46
Prince Edward Island	49.45	47.65	361,496		1.04	404,564	9,280,143	.53	124,242	4,804,726	.86
Canadian Northern	19.17	74.66	9,235,664	509,386	2.25	1,681,760	158,400,017	1.20	5,970,449	2,024,003,946	2.37
Canadian Northern Ontario	29.34	67.51	712,932	57,596	1.23	247,540	11,299,577	.54	648,581	60,889,252	1.56
Canadian Northern Quebec	26.27	71.96	701,409	23,119	1.89	614,260	19,819,446	.82	874,173	72,701,542	1.95
Canadian Pacific	30.19	68.14	47,020,362	1,960,153	2.47	13,593,569	1,610,251,856	1.64	25,940,238	10,180,782,322	2.89
Cape Breton	53.38	46.44	19,711		.47	7,176	164,848	.25	6,474	92,064	.16
Caraquet	32 03	67.97	47,078		1.41	17,383	655,310	.45	37,484	1,461,878	.96
Central Ontario	29.07	68.67	223,166	8,571	1.44	162,761	3,816,871	.53	269,177	7,493,217	2.35
Crow's Nest Southern	16.20	83.58	86,321	2,683	1.76	22,634	554,720	.53	177,489	8,071,631	3.12
Cumberland Ry. & Coal Co.	15.72	84.13	47,034		2.46	46,306	575,049	.67	389,197	6,295,732	2.09
Dominion Atlantic	41.88	57.62	611,552	12,557	1.64	420,320	18,704,240	.85	412,300	22,676,500	1.91
Eastern British Columbia	10.25	89.47	7,704		5.48	7,195	72,840	.56	140,824	1,501,232	4.90
Elgin and Havelock	31.28	68.72	19,600		.70	11,405	148,265	.22	15,371	395,604	.48
Essex Terminal		99.26	19,300		1.82				120,661	1,206,610	1.81
Grand Trunk	34.77	64.18	18,934,930	882,607	1.89	11,506,224	573,956,527	1.43	17,972,015	3,282,187,091	2.13
G. T. R. (Canada Atlantic)	25.43	75.19	1,442,469	62,777	1.50	591,968	20,624,385	.68	1,720,419	194,492,967	1.96
Halifax and South Western	48.58	50.73	368,910	18,053	1.29	215,986	7,192,454	.70	252,442	11,966,755	.87
Hereford	26.94	71.41	78.042	2,270	.95	33,207	735,494	.30	145,616	2,920,280	1.12
Inverness Ry. and Coal Co.	11.77	87.61	112,035	2,641	1.79	35,886	848,851	.55	306,771	17,268,215	1.56
Irondale, Bancroft & Ottawa	34.18	63.76	34,344		.76	15,257	283,265	.26	24,148	627,760	.48
Kent Northern	42.05	57.95	16,902		1.22	8,600	232,200	.51	9,106	262,602	.71
Kettle Valley	12.33	85.72	1,760		2.36	781	15,043	.29	2,963	39,082	2.02
Kingston and Pembroke	29.45	72.49	133,533		1,52	98,529	2,561,745	.51	140,922	6,623,334	1.63
Klondike Mines	3.44	95.88	7,717		7.77	463	10,730	1.26	23,841	245,716	7.45
Lotbiniere & Megantic	15.72	82.24	19,707		1.83	10,279	156,758	.30	56,675	798,325	1.62
London & Port Stanley	32.58	66.66	121,548	3,589	.97	172,485	2,815,529	.48	537,798	8,200,468	1.40
Maine Central	58.03	41.97	15,795		1.05	97,277	496,113	.72	198,283	991,415	.60
Manitoba Great Northern	6.32	96.61	51,609	497	2.38	10,887	244,297	.23	194,294	11,997,496	2.69
Maritime Coal Ry. & Power Co.	11.69	88.31	22,180	6,520	2.87	21,191	198,956	.70	199,417	2,024,240	2.53
Massawippi Valley	32.62	66.95	195,243	814	1.13	152.867	2,806,014	.72	563,151	17,146,104	1.53
Moncton and Buctouche	36.78	63.02	21.916		1.33	22,457	463,061	.49	26,201	503,178	.84
Midland Ry. of Manitoba	36.97	62.88	26,419	70	2.31	13,893	775,316	1.32	22,184	1,549,225	4.08
Montreal Atlantic	20.06	77.64	665,125	14,461	1.66	344,083	8,306,967	.74	1,339,601	73,829,960	1.73
Montreal and Province Line	49.61	48.71	101,632	8,270	1.20	206,379	3,068,030	.88	96,080	2,473,250	1.33
Montreal and Vermont Jct.	50.37	49.53	118,145	2,007	1.08	122,076	2,265,117	.96	447,932	9,827,924	1.22
Morrissey, Fernie & Michel	9.53	90.47	24,668		3.23	84,550	515,755	.30	381,099	2,324,703	2.92
Napierville Jct.	7.97	91.48	26.714	216	2.64	14,723	188,443	.33	271,534	7,597,803	2.41
Nelson & Fort Sheppard	40.30	56.04	56.784	2,860	1.41	23,602	720,003	.86	29,694	1,128,889	2.36
New Brunswick Coal & Ry. Co.	24.39	67.84	56,102		.86	18,640	389,162	.20	56,906	2,395,879	.58
New Brunswick & P. E. I.	34.28	65.41	59.200		.63	26,841	561,182	40	48,475	727,125	.47
New Westminster Southern	25.51	65.66	21,657	32	2.72	25,166	297,558	.64	52,277	694,547	1.78
North Shore	10.26	89.74	4,848		.36	850	6,800	.04	14,306	34,448	.35
Ottawa and New York	43.76	54.26	135,403	8,669	1.39	138,844	3,553,598	1.07	221,688	9,173,068	1.76
Pere Marquette	7.16	92.47	1,160,474	9,348	2.04	312,770	6,261,271	.61	2,007,845	381,106,818	2.47
Phillipsburg Ry. & Quarry Co.		100.00	6,245						14,592	87,552	
Quebec Central	30.95	68.19	738,035	219,179	1.83	402,682	17,469,670	.88	931,257	71,197,944	2.99
Quebec & Lake St. John	35.13	63.34	483,446	8,446	1.65	352,463	11,973,434	1.20	381,416	35,662,632	1.75
Quebec, Montreal & Southern	37.17	62.69	280.285	2,710	1.43	230,665	5,229,971	.70	389,663	21,131,805	1.63
Quebec Oriental	44.85	55.09	94,225	4,975	.96	26,917	1,354,237	.71	32,314	2,574,978	.65
Quebec Ry., Light & Power Co.	15.81	83.35	30,476	1,099	2.45	100,449	804,604	1.56	162,784	1,986,879	2.72
Red Mountain	18.36	80.35	13.854	81	1.41	8,552	76,748	.54	27,103	237,120	1.14
Rutland and Noyan	63.53	36.47	7,874		1.76	124,578	422,319	1.61	99,248	336,451	2.07
Salisbury and Albert	40.21	56.53	23,560	1,743	.98	11,403	255,190	.39	21,844	226,757	55
Schomberg and Aurora	46.46	53.37	23.507		.57	20,634	201,112	.26	11,376	113,660	.30
Stanstead, Shefford & Chambly	41.15	56.22	88,408	2,620	1.12	171,112	1,269,672	.66	473,555	2,183,188	1.27
St. Clair Tunnel		100.00									
St. Lawrence and Adirondack	39.88	59.68	311,003	8,548	1.90	627,935	13,378,914	1.26	866,278	30,766,666	2.86
St Martins	32.56	65.27	17.580		1.08	11,120	211,372	.35	17,085	233,524	.70
Sydney and Louisburg	5.48	92.24	268,590		2.82	120,135	1,692,585	1.11	4,330,338	61,192,946	2.82
Temiscouata	28.66	69.68	150,211	7,650	1.42	68,129	2,127,433	.42	147,951	6,294,509	1.95

(Continued on page 116)

Steam Railway Statistics for Year Ended June 30, 1912—(*Continued from page 115*)

Name of Railway	Proportion of total Passenger service train revenue to total earnings	Proportion of freight revenue plus switching revenue, &c., to total earnings	Revenue Train Mileage	Mileage of Non Revenue Trains	Earnings per Train Mile	Passengers Carried	Passengers Carried One Mile	Passenger Earnings per Train Mile	Tons of Freight Carried	Tons of Freight Carried One Mile	Freight Earnings per Train Mile
Timiskaming and Northern Ont.	39.27	56.08	878,579	49,150	2.20	484,467	28,885,025	1.66	588,890	74,266,754	2.50
Thousand Islands	33.38	60.19	32,456	.....	1.23	47,358	284,148	.41	37,734	226,404	.74
Toronto, Hamilton & Buffalo	25.16	74.17	477,599	6,337	3.07	581,302	17,404,896	1.25	2,341,576	90,979,320	6.01
Vancouver, Victoria & Eastern	32.05	66.15	307,636	81,259	2.76	286,776	8,081,508	1.19	954,608	27,517,107	3.32
Victoria Terminal Ry. & Ferry Co.	45.16	43.29	1,979	.	2.64	88,046	87,166	1.82	32,957	32,027	2.31
Victoria and Sidney	47.49	51.43	31,989	.	1.86	91,121	1,001,836	1.30	34,365	463,550	1.93
Wabash (in Canada)	28.42	71.38	1,580,322	22,575	1.44	584,529	35,095,556	.87	1,317,283	305,235,674	1.90
Wellington Colliery Co.	4.84	95.16	31,200	.....	3.04	7,706	82,829	.14	504,821	5,426,825	2.90
York and Carleton	34.97	65.03	8,573	....	.66	6,085	60,850	.23	14,279	142,790	.43
	29.65	68.35	100,930,271	4,328,812	..	...41,124,181	2,910,251,636		89,444,331	19,558,190,527	.. ..

Orders by Board of Railway Commissioners.

[illegible] Canadian Railway and Marine World has published in each issue summaries of orders passed by the Board of Railway Commissioners, so that subscribers who have filed the paper have a continuous record of the Board's proceedings. No other paper has done this.

The dates given of orders, immediately following the numbers, are those on which the hearings took place, and not those on which the orders were issued. In many cases orders are not [illegible] assigned to them.

18459. Jan. 9.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to build across 2 highways in Brighton Tp., mileage 96.31 and 98.64, Ont.

[illegible] Jan. [illegible]—Authorizing C.P.R. to build additional tracks, north and south of existing main line, across Crescent Road, Saltcoats, Sask.

18461. Jan. 9.—Authorizing G.T. Pacific Ry. to build branch from its line in Block 15, across Fourth St., through Block 10, across Inkerman Ave., and southerly through Block 11, across Waterloo Ave., into Block 12, Beechmount Subdivision, Edmonton, Alta.

18462. Jan. 8.—Approving Niagara, Welland and Lake Erie Ry. standard passenger tariff C.R.C. 1, showing a cash fare of 5c. per passenger, or 6 tickets for 25c., to apply between any 2 points on its line.

18463. Jan. 9.—Authorizing G.T. Pacific Branch Lines Co. to build highway across its Prince Albert Branch at mileage 45.9, Rural Municipality 371, Saskatoon District, Sask.

18464. Jan. 10.—Suspending Wabash Rd. tariff, C.R.C. 656 and G.T.R. supplement 11 to C.R.C. w. 113, on coal from Detroit, Mich., to Windsor and Walkerville, Ont.

18465. Jan. 7.—Extending, to June 1, time within which Esquimalt and Nanaimo Ry. shall complete its Cowichan Lake Branch from its main line at Cowichan Lake, 18 2-3 miles.

18466. Jan. 9.—Approving clearances as shown on plan, of tracks and buildings of Edmonton Portland Cement Co., in sec. 5-53-19, w. 5 m., Alta., subject to condition that trainmen be prohibited from being on sides of cars when passing company's warehouse.

18467. Jan. 8.—Dismissing application of residents of Pas, Man., for order requiring Canadian Northern Ry. to provide through sleeping car service from Winnipeg to Pas.

18468. Nov. 27, 1912.—Approving location of C.N. Ontario Ry. station on north side of track, on lot 8, east of Little St., Beachburg, Ont.

18469. Jan. 9.—Authorizing C.P.R. to build diversions of road allowances between secs. 23 [illegible] and [illegible] sec. [illegible], at Carmangay, Alta.

18470. Jan. 3.—Authorizing C.P.R. to build spur for Saskatchewan Bridge and Iron Works, Moose Jaw, Sask.

18471. Jan. 9.—Authorizing C.P.R. to build di[illegible] east of Brandon, Man. [illegible] sec. [illegible] 18, to [illegible] p. m.; and [illegible] revised location [illegible] built at [illegible], Que.

[illegible] C.P.R. to build siding for Northern Electric and Mfg. Co., Calgary, Alta.

[illegible] C.N. Ontario Ry. to build bridge over Timagami River, Crerar Tp., [illegible] Ottawa.

18475. Jan. 10.—Authorizing C.P.R. to divert highway at mileage 101.98 on its Pheasant Hills Branch, Sask., to build across said diversion and to close existing crossing.

18476. Jan. 9.—Authorizing C.P.R. to build spur for City of Calgary, Alta., across road allowance on northerly limit of n. w. ¼ Sec. 34-23-1, [illegible]

[illegible] Jan. 9.—Approving location G.T. Pacific Ry. station in west half of Lot [illegible], Coast District, B.C.

18478. Jan. 10.—Approving revised location of G.T.R. siding for Pratt & Letchworth Co., Brantford, Ont.

18479. Jan. 10.—Approving proposed layout of G.T.R. tracks and station at Stoney Point, and crossing of side road between Lots 6 and 7, Con. 1, Tilbury North Tp., Ont.

18480. Jan. 10.—Authorizing C.P.R. to build three spurs for Montreal Ice Co., Hudson, Que.

18481. Jan. 10.—Authorizing C.P.R. to build spur on Gunns Packing Co.'s property, north of St. Clair Ave. and west of Gunns Road, Toronto.

18482 to 18484. Jan. 8, 9, 10.—Authorizing G.T.R. to build siding on Maisonville Ave., and across Sandwich, Windsor and Amherstburg Ry., for Ford Motor Co., Sandwich East Tp.; siding for British American Oil Co., Ashbridges Bay, Toronto; and two sidings for National Fireproofing Co., East Flamboro Tp., Ont.

18485. Jan. 4.—Authorizing Canadian Northern Ry. to build spur from Rue la Verandrye, westerly to Block 4, crossing Rue St. Jean Baptiste; and spur from station 1+88 westerly, crossing Rue St. Jean Baptiste to Block 4, St. Boniface, Man.

18486. Jan. 8.—Dismissing St. John and Quebec Ry. application for connection with C.P.R.

[illegible] Jan. 13.—Ordering Algoma Central and Hudson Bay Ry. to restore its switch from main line to Bromley Bros.' sawmill, Sault Ste. Marie, Ont., and to put it in condition for operation within two weeks from date.

18488. Jan. 8.—Dismissing application of Abbotsford Timber and Trading Co., Abbotsford, B.C., for leave to cross Vancouver, Victoria and Eastern Ry. with its logging track in Sec. 20, Tp. 16, e. c. m.; and authorizing it to cross overhead, 1,500 ft. nearer Abbotsford than crossing applied for.

18489. Jan. 7.—Defining, until further order, the express delivery limits in Megantic, Que.

18490. Jan. 14.—Approving regulations governing opening and closing of pivotal span of railway bridge over Fraser River at New Westminster, B.C.

18491. Jan. 14.—Approving Central Ry. of Canada revised location crossing South Nation River, between mileage 27 and 29, Prescott County, Ont.

18492. Jah. 13.—Authorizing C.N. Ontario Ry. to build Y between its main line and C.N. Montreal Tunnel and Terminal Co.'s line, across Vertu Road, between Lots 258 and 359, St. Laurent Parish.

18493. Jan. 11.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to build across Stanley St., to divert road allowance to connect Front and Stanley Sts., closing up portion of Ferdinand St., and to cross same with diverted road, Trenton, Ont.

18494. Jan. 14.—Authorizing G.T.R. to operate over crossing of Montreal Park and Island Ry. near Turcot, Que., between 10 a.m. and 4 p.m., and between 8 p.m. and 6 a.m.

18495. Jan. 14.—Approving proposed Supplements to Canadian Classification 15, and Supplements 1, 2, 3, and 4 thereto, to be known as Canadian Freight Classification 16, effective Mar. 1.

18496. Jan. 13.—Authorizing G.T.R. to build bridge 138, at mileage 238.02, District 2, Eastern Division, in Bagot County, Que.

18497. Jan. 14.—Authorizing G.T.R. to build siding for Cement Products, Ltd., Toronto.

18498. Jan. 14.—Approving location of C.P.R Touchwood Hills Branch from Sec. 15-29-14, at mileage 43.15, to Sec. 34-29-22, w. 2 m., at mileage 91.90; and authorizing it to build across 35 highways, mileage 43.82 to 91.31, Sask.

18499. Jan. 13.—Approving C.P.R. plan revising design of south abutment of bridge 17.0, Sudbury Division, to permit road diversion under the 40 ft. span.

18500. Jan. 10.—Authorizing C.N. Quebec Ry. to build siding for Canada Cement Co., Pointe aux Trembles Parish, Que., across Montreal Terminal Ry.

18501. Jan. 13.—Authorizing Canadian Northern Ry. to build spur at mileage 571.63, on lane between Industrial and Railway Aves., crossing Donald and James Sts., Battleford, Sask.

18502. Jan. 13.—Authorizing C.N. Ontario Ry to extend spur to Canada Chemical Co.'s smelter, Parry Sound, to Standard Chemical Iron and Lumber Co.'s ore bins and plant.

18503. Jan. 9.—Approving location of G.T. Pacific Ry. station at New Hazleton, mileage 181, Prince Rupert east, in Lot 882, Group 1, Cassiar District, B.C.; work to be completed within 60 days.

18504. Jan. 14.—Ordering G.T.R., within 60 days, to install improved type of illuminated automatic electric bell at highway crossing at Kerwood, Ont.

18505. Jan. 13.—Relieving C.P.R. from further protecting crossing between Cons. 4 and 5, mileage 105.7, London Subdivision, Ont.

18506. Jan. 14.—Authorizing C.P.R. to build additional track across highway in Provincial Government Lot 433, Tp. 14, R. 3, e. c. m., at mileage 95.8, Cascade Subdivision, B.C.

18507. Jan. 8.—Authorizing Niagara, Welland and Lake Erie Ry. to open for traffic its line from near M.C.R. station, north along South Main St., crossing G.T.R. spur at Lincoln St., then east along East Main St. to G.T.R. station, Welland, Ont., 1.52 miles.

18508. Jan. 14.—Ordering Great Northern Ry. to build spur for Delta Shingle Co., near Townsend station, B.C.

18509. Jan. 14.—Relieving G.T.R. from further protecting crossing just north of Varney station, Ont.

18510. Jan. 15.—Authorizing Imperial Bank of Canada, St. Catharines, Ont., to pay cheques drawn by A. D. Cartwright, Secretary of the Board, to G.T.R. for $1,812.96, and Clifton Sand, Gravel and Construction Co. for $1,058.04.

18511. Jan. 15.—Authorizing C.N. Ontario Ry. to build bridge across Amable du Fond River, Pentland Tp., at mileage 188.1 from Ottawa.

18512. Jan. 7.—Ordering C.P.R. to install gates, to be operated by a man in one tower, at North Vancouver Ferry, Columbia Ave., and G.T. Pacific Ry.'s team crossings.

18513. Jan. 14.—Authorizing C.P.R. to open for traffic its double track between Hedge and Port Arthur, mileage 124.6 to 127.8, Nipigon Subdivision, except portion over bridge between mileage 125.4 and 125.5; and its double track between Ramsay and Woman River, mileage 70.9 to 86.0, Chapleau Subdivision, Ont.

18514. Jan. 7.—Authorizing C.P.R. to change location of foot bridge over its tracks on George St., Smiths Falls, Ont.

18515. Jan 4.—Authorizing C.P.R. to build highway diversion to join road allowances on west and north boundaries of Sec. 12-11-10, w. 4 m., Alta; and rescinding order 18265, Dec. 9, 1912.

18516. Jan. 15.—Dismissing Federation of the Quebec Chambers of Commerce application for order directing South Eastern Ry. to reopen its line between Drummondville and Sorel, Que.

18517. Jan. 15.—Authorizing G.T.R. to build siding for Lumber and Construction Co., Montreal Parish, Que.

18518. Jan. 15.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to build across road allowance between Thurlow and Tyendinaga Tps., at mileage 69.08 from Glen Tay, Ont.

18519. Jan. 15.—Authorizing C.P.R. to build spur for Robinson and Black, Winnipeg.

18520. Dec. 28, 1912.—Authorizing G.T. Pacific Ry. to cross Oliver Road highway with its Lake Superior Branch, at mileage 9.8, McIntyre Tp., Ont.

[illegible] Jan. 15.—Authorizing C.N. Ontario Ry. to build across public road between Cons. A and 1, Nepean Tp., at station 873+00, by means of a trestle, and rescinding order [illegible], Apr. [illegible].

18522. Jan. 15.—Authorizing C.N. Ontario Ry. to build across Sturgeon River, east crossing, Pedley and Springer Tps., Nipissing District, mileage 249.9 from Ottawa.

18523. Jan. 16.—Authorizing C.P.R. to divert mill race from Carroll's pond, Ingersoll, and to take part of lot 18, Broken Front concession, West Oxford tp., Ont., 0.775 acre.

18524. Jan. 15.—Authorizing C.P.R. to build its Weyburn-Lethbridge branch across 44 highways from mileage 131.13 to 173.03.

18525. Jan. 15.—Amending order 17474, Sept. 13, 1912, re C.N. Ontario Ry. crossing near Pembroke, Ont.

18526. Jan. 16.—Authorizing C.P.R. to build extensions to two sidings for Oliver and Webster, on lot 3, r. 7, Sydenham tp., and lot 15, east side of Stavely street, Owen Sound, Ont., and to build new siding on lots 3 and 4, r. 7, Sydenham tp.

General order 100, Jan. 16.—Prescribing regulations for transportation of explosives, to come into force March 1, and rescinding order 7881, Aug. 27, 1909.

18527. Jan. 16.—Authorizing C.P.R. to build its Weyburn-Lethbridge branch across 29 highways from mileage 78.22 to 112.08.

18528. Jan. 16.—Authorizing C.P.R. to build siding or third track across public road allowance between Divisions F and C, lot 1, r. 3, Guelph tp., Ont.

18529. Jan. 16.—Ordering that interlocking plant be installed at crossing of C.P.R. Didsbury-Kininvie branch by C.N.R. Vegreville-Calgary branch in s.e. and s.w. ¼ sec. 28-25-24, w. 4 m., Alta., by June 1, and authorizing C.N.R. to operate over said crossing for construction purposes only, until interlocker is installed.

18530. Jan. 16.—Authorizing Kingston and Pembroke Ry. (C.P.R.) to use bridges 70.2 and 8[illegible].2, authorized by orders 12035 and 12034, Oct. 18, 1910.

18531. Jan. 15.—Authorizing G.T.R. to build two sidings for Canadian Crocker-Wheeler Co., St. Catharines, Ont.

18532. Jan. 15.—Authorizing G.T.R. to rebuild 3 bridges: 228, mileage 193.75; 236, mileage 2[illegible].05, and 242, mileage 216.36, District 1[illegible], Northern Division, Ont.

18533. Jan. 15.—Authorizing G.T.R. to build 3 additional tracks, at grade, across Lusignan street, Montreal.

18534. Jan. 16.—Ordering G.T.R. to build culverts under its line on lots 22 and 23, con. 1, Humberstone tp., Ont.

18535. Jan. 16.—Approving C.N. Ontario Ry. revised location through unsurveyed territory in Sudbury District, mileage 250.37 to 254.3 from Sudbury Jct.

18536. Jan. 16.—Authorizing Canadian Northern Ry. to build across public road between secs. 20 and 21, tp. 27-8, w. 3 m., Sask.

18537. Jan. 16.—Authorizing city of Montreal to lay sewer under G.T.R. West Broadway outlet, Notre Dame de Grace.

18538. Jan. 15.—Amending order 17250, Aug. 14, 1912, re building of subway by Canadian Northern Ry. at Victoria street, North Battleford, Sask., by ordering that it build said subway by Aug. 31, maintain watchman at crossing pending construction, and be liable to $100 a day penalty for default.

18539. Jan. 16.—Authorizing C.P.R., to open for traffic its double track between mileage 92.4 and 98.0, Man.

18540. Jan. 17.—Amending order 18356, Dec. 23, 1912, re C.P.R. crossing of Jacques Cartier Union Ry., Lachine parish, Que.

18541. Jan. 15.—Apportioning cost of installing gates at crossing of Scugog St. by Campbellford, Lake Ontario and Western Ry. (C.P.R.), in Bowmanville, Ont.

18542, 18543. Jan. 18.—Approving C.N. Onissing district, mileage 277.9 tb 281.2 from issing district, mielage 277.9 to 281.2 from Ottawa, and through unsurveyed territory in Sudbury district, mileage 189.1 to 192.2 from Sudbury Jct.

18544. Jan. 18.—Approving revised location of C.P.R. main line from mileage 27.051 from junction with British Columbia Southern Ry., in lot 8107, to lot 129, at mileage 32.89, Kootenay district.

18545. Jan. 17.—Extending, to Apr. 13, time within which C.P.R. shall build spur into water lots 8, 9, 10, 11 and 12, New Westminster, B.C.

18546. Jan. 15.—Ordering C.N. Ontario Ry. to build undercrossing for J. A. Brown, in Westmeath tp., Ont.

18547. Jan. 17.—Authorizing G.T. Pacific Ry. to build its Prince Albert branch across highway in n.w. ¼ sec. 34-47-26, w. 2 m., at mileage 103.2, East Saskatchewan district.

18548. Jan. 17.—Authorizing C.N. Ontario Ry. to build its branch connecting Toronto-Sudbury line with line from Ottawa to northern part of Toronto, across C.P.R., near Donlands station.

18549. Jan. 18.—Authorizing Canadian Northern Ry. to build spur from Union Supply Co.'s spur to north end of block 20, and a spur for International Harvester Co. of America at North Battleford, Sask., and to cross Railway Ave.

18550. Jan. 20.—Approving proposed location of C.P.R. station on lot 34, con. 10, Darlington tp., Ont., at mileage 58.17, Toronto subdivision.

18551. Jan. 18.—Authorizing G.T.R. to build siding, with spur for Ottawa Gas Co., Ottawa.

18552. Jan. 20.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to build bridge 11.4 over Mud Lake, near Maberley, Ont.

18553. Jan. 18.—Authorizing Saskatchewan Government to build highway crossing over C.N.R., between secs. 30 and 31, tp. 34, r. 4, w. 3 m.

18554. Jan. 20.—Authorizing C.P.R., to open for freight traffic Chinook Coal Co.'s spur on its Kipp-Aldersyde Branch, mileage [illegible] to 6[illegible], Alta.

18555. Jan. 22.—Authorizing C.P.R., to build its Moose Jaw South-westerly Branch across highway adjoining north boundary of sec. 32-11-29, w. 2 m., at mileage 39.09.

18556. Jan. 22.—Authorizing C.P.R., to open for traffic portion of its double track from Caron to Mortlach, mileage 16.2 to 25.6, Sask.

18557. Jan. 22.—Relieving C.P.R., from providing further protection at second public crossing west of Lachute station, Que.

18558. Jan. 22.—Authorizing Canadian Northern Ry., to build its Craven-Humboldt Branch across C.P.R. Regina-Bulyea Branch in n.w. ¼ sec. 13-20-21, w. 2 m., Sask.

18559. Jan. 22.—Amending order 18201, Dec. 2, 1912, re overhead crossing of C.N. Ontario Ry. by Campbellford, Lake Ontario and Western Ry. (C.P.R.) at mileage 95.1 from Glen Tay.

18560. Jan. 18.—Authorizing C.N.O.R., to cross C.P.R., and G.T.R., near St. Clair Ave., Toronto, Ont.; and rescinding order 14957, Oct. 9, 1911.

18561, 18562. Jan. 22.—Authorizing C.P.R., to build spurs for Whitmore Bros., and Regina Development Syndicate, Regina, Sask.

18563. Jan. 23.—Authorizing Canadian Northern Ry., to build its Bienfait-Estevan Branch across 7 highways, in Saskatchewan.

18564. Jan. 24.—Postponing from Feb. 10, modification of rule 7 G.T.R. Special Freight Tariff C.R.C. No. E 2374, in Supplement 5; also modification of rule 33 C.P.R. Local Freight Tariff C.R.C. No. E. 2141, in Supplement 9; and restricting application of stopover privileges with respect to international lumber shipments to such as are destined exclusively to U.S. points.

18565. Jan. 23.—Authorizing Kingston and Pembroke Ry. (C.P.R.), to build bridge 44.86, Ont.

18566. Jan. 23.—Authorizing C.P.R., to operate bridges 20.42, 39.11, 50.73, 73.93, 45.44, 33.2, and 62.4, Nipigon Subdivision.

18567. Jan. 23.—Approving Campbellford, Lake Ontario and Western Ry. (C.P.R.) plan of overhead crossing of highway at mileage 131.23, by a 20 ft. deck plate girder span on concrete abutments.

18568. Jan. 23.—Authorizing C.P.R., to build bridge 36.5, Farnham Subdivision, Eastern Division, Que.

18569. Jan. 24.—Approving Canadian Northern Ry. location through tps. 22-25, r. 19, w. 2 m., Sask., mileage 19.66 to 43.50.

18570. Jan. 24.—Authorizing C.P.R., to build its Swift Current Northwesterly Branch across 39 highways, mileage 35.95 to 77.[illegible]6, from Swift Current, Sask.

18571. Jan. 24.—Approving revised location of G.T. Pacific Branch Lines Co.'s Regina-Boundary Branch from sec. 6-1-2, w. 2 m., to International Boundary, from mileage 153.90 to 155; and authorizing building across highway at mileage 155.

18572. Jan. 23.—Authorizing Winnipeg and Northern Ry. to build across C.P.R. in lot 101, St. Pauls parish, Man.

18573. Jan. 24.—Extending to June 1, time for installing bell at Kerwood crossing, Ont., as provided by order 18504, Jan. 14.

18574. Jan. 23.—Authorizing Toronto, Hamilton and Buffalo Ry. to build spur for J. H. Bowman Lumber Co., Ancaster tp., Ont.

18575. Jan. 24.—Authorizing Vancouver, Victoria and Eastern Ry. and Navigation Co., to build transfer track connecting with C.P.R. near Hawks Ave., Vancouver, B.C.

18576. Jan. 23.—Authorizing C.P.R., to take, for building additional team delivery track, part of lot Cadastral 252, about 0.413 acre, St. Constant parish, Que.

18577. Jan. 27.—Suspending until March 1, the tariffs of C.P.R., G.T.R., C.N. Quebec, and Temiscouata Rys., increasing rates on pulpwood from Ontario, Quebec, New Brunswick, to eastern U.S. points.

18578. Jan. 23.—Confirming order 16394, Apr. 25, 1912; and ordering that railway mileage tariffs from trans-shipment points on exlake corn in carloads, for milling purposes, be revised to provide rates on corn that shall not, in any case, exceed mileage tariff charged from same points and same distances, on exlake wheat, oats, and barley in carloads, for milling purposes; to become effective not later than Feb. 10.

18579. Jan. 25.—Authorizing G.T. Pacific Branch Lines Co., to carry traffic over its Alberta Coal Branch, between mileage 36.6 and 56.4.

18580. Jan. 24.—Ordering Canadian Northern Ry. to protect crossing at Water Ave., Winnipeg, by watchman between 6 a.m. and 12 p.m.; his [illegible]

[illegible] to chemicals list, and also continued in oils list.

18582. Jan. 25.—Adding town of St. Lambert, Que., as a party to application of town of Greenfield Park for protection at G.T.R. crossing of Lapiniere road.

18583. Jan. 25.—Authorizing C.P.R., to take, without consent of owner, certain lands in connection with building of subway at Decarie Ave., Montreal.

[illegible] Jan. 27.—Approving Quebec, Montreal and Southern Ry. bylaw, cancelling authority to D. I. Roberts, formerly General Freight and Passenger Agent, and authorizing N. J. Ferguson, General Freight and Passenger Agent, to prepare and issue special freight competitive, and special passenger tariffs.

18585. Jan. 23.—Approving C.N. Ontario Ry. location from road between cons. 5 and 6, mileage 11.5, to lot 1, con. 7, mileage 13.47, South Orillia tp., and from latter point connecting with constructed line in lot 17, con. 13, North Orillia tp.

18586. Jan. 27.—Authorizing C.N. Ontario Ry. to build bridge over Dishnish Creek, Algoma district, mileage 257 from Sudbury Jct.

18587. Jan. 28.—Authorizing Algoma Central and Hudson Bay Ry. to open for traffic its main line extension to Bruce St., Sault Ste. Marie, Ont., from near West St., 7,000 ft.

18588. Jan. 28.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.), to build across road allowance between lots 22 and 23, broken front concession Darlington tp., Ont., mileage 152.06, from Glen Tay.

18589. Jan. 27.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.), to build across road allowance between lots 2 and 3, con. 1, Hope tp., Ont.; and rescinding order 17519, Sept. 18, 1912.

18590. Jan. 29.—Ordering C.P.R. to erect fences on each side of right of way on its Sirdar subdivision, B.C., from mileage 77 to Sirdar; work to be completed by May 31.

18591. Jan. 28.—Approving C.P.R. plans showing transfer track at Midale, Sask.

18592. Jan. 29.—Ordering G.T. Pacific Ry. to stop its trains for mail and passenger service at Haysport, B.C., until opening of navigation.

18593. Jan. 7.—Authorizing city of Vancouver, B.C., to build bridge or viaduct, as a public highway, from Georgia to Harris Sts, over Vancouver, Victoria and Eastern Ry. (G.N.R.).

18594. Jan. 30.—Extending for 3 months from date, time within which B.C. Electric Ry. be allowed to appeal to Supreme Court of Canada from order 17840, as extended by order 18253.

18595. Jan. 29.—Authorizing Canadian Northern Ry. to build bridge across Seine River, Rainy River district, Ont., to replace existing bridge.

18596. Jan. 30.—Approving Campbellford, Lake Ontario and Western Ry. (C.P.R.) plan, showing general layout of Port Hope viaduct, Port Hope, Ont.; and plan showing details of piers 8 and 9 of same.

18597. Jan. 29.—Authorizing C.P.R. to build additional track on northerly side of existing main line across 3 highways, Moose Jaw subdivision, Saskatchewan division, mileage 125.075 to 127.125

18598. Jan. 29.—Authorizing C.N. Ontario Ry. to build bridges over Beaver River (west branch), over Conklin River, over Goose River (second crossing), Algoma district, and across Macaming River (west crossing), Sudbury district.

18599. Jan. 30.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to build bridge over creek near Cobourg, Ont.

18600. Jan. 30.—Authorizing G. Shearer and C. Shiriff of Huntingdon, Que., to build joint crossing between their farms, over G.T.R..

18601. Jan. 30.—Approving proposed location of C.P.R. shelter station at Fesserton, Ont.

18602. Jan. 31.—Reporting, to Governor in Council for approval, Atlantic, Quebec and Western Ry. bylaws governing the operations at terminals and stations.

18603. Jan. 31.—Authorizing Canadian Northern Ry. to build across highways on its Delisle extension, Sask.

18604. Jan. 29.—Authorizing C.P.R. to build spur for St. John and Quebec Ry., on J. Palmer Co.'s property, Fredericton, N.B.

18605. Jan. 31.—Authorizing Canadian Northern Ry. to divert trail in south ½ sec. 3-21-20, w. 2 m., Sask.

18606. Jan. 30.—Authorizing Saskatchewan Government to build highway over C.P.R. on road allowance west of sec. 30-15-14, w. 3 m.

18607. Jan. 31.—Authorizing Hamilton Radial Ry. to replace present derailing switches where it crosses G.T.R., in Burlington, Ont.

18608. Jan. 31.—Authorizing T.H. & B. Ry. to build spur for Canadian Porcelain Co., in Barton tp., Ont.

18609. Jan. 31.—Authorizing C.P.R. to build spur for J. Palmer Co., Fredericton, N.B.

18610. Jan. 31.—Authorizing Canadian Northern Ry. to build across 22 highways on its Morris-Portage branch, Man.

Changes in Gradients, and Temporary Structures, on the National Transcontinental Railway.

There has been considerable discussion in the daily press and at political meetings in regard to changes said to have been made in the N.T.R. construction by the present commission. A return presented to the House of Commons recently, giving the official correspondence on the subject, will prove of general interest to engineers, contractors, etc.

The correspondence opened with the following letter from E. J. Chamberlin, President, Grand Trunk Pacific Ry., to R. W. Leonard, Commissioner, National Transcontinental Ry., July 16, 1912:—

"I learn from our engineers that the standard of work on the portion of the N.T.R. between Lake Superior Jct. and Cochrane, which was at the outset adopted and has so far been complied with, is being departed from, and that instead of 0.4 grades and permanent structures, you have authorized grades up to 1% and the erection of temporary wooden structures. In regard to this, I would call your attention to clause 7 of the agreement of July 29, 1903, which provides that the construction of the Eastern Division shall be done according to the specifications approved by the company and shall be subject to the joint supervision, inspection and acceptance of our Chief Engineer and the Chief Engineer of the Commission. I beg to say that if this work is done in accordance with what I understand to be your recent instructions, it will not be in compliance with the agreement, nor satisfactory to this company, and cannot be accepted."

The Commissioner of the N.T.R. replied to Mr. Chamberlin on July 19, 1912, as follows:—"I find, on going over the profiles, that there are many places where a large expenditure may be saved and the line actually improved for operating purposes, and the time of completion considerably shortened, without in the least affecting the hauling capacity of locomotives, by making certain modifications, and I have given instructions to make such modifications accordingly. I am quite satisfied that the interests of the G.T. Pacific and the Government are identical in this matter, and I noted on my recent trip west that the modifications referred to are in accord with the practice of the G.T.P.R. Co. on the portions of the National Transcontinental Ry. built by that company, namely, from Winnipeg west, and from Fort William to Lake Superior Jct.

"In regard to wooden trestles, I may say that your engineers must be aware that it is absolutely necessary to put in wooden structures in some cases where the foundations are such that heavier structures, or solid embankments, cannot be constructed at present. There are points along the line where much money has been uselessly expended in futile attempts to make solid embankments, only, finally, to have to put in wooden structures, and I notice that the construction of such wooden trestles has been the practice of the G.T.P.R. on the portions of the N.T.R. above mentioned.

"I have carefully perused clause 7 of the agreement of July 29, 1903, and I fail to notice in this, or in any other agreement or act relating to the construction of the Eastern Division of the N.T.R. any provision relating to the gradients to which the line shall be built, or the nature of the structures, but it may be of satisfaction to you to have your Chief Engineer, or Assistant Chief Engineer, discuss with our Chief Engineer any proposed changes, and report to you in regard to same. It is not necessary for me to state that this Commission welcomes any criticism or assistance from your able staff of engineers on any or all matters affecting the economical construction and operation of the road."

Mr. Chamberlin wrote again to Mr. Leonard on July 23, 1912:—"I have yours of July 19, regarding changes in grade on the N.T.R., and note the reasons you offer for the modifications contemplated. Aside altogether from this company's strict rights, to which I called attention in my letter of the 18th inst. to you, I would ask you to furnish me with profiles showing the changes proposed, so that I may consider their effect. You will, I think, agree that it would be in the interests of both the Commission and this company that no work in connection with any changes of grade should be proceeded with until our approval has been given, and I would ask you to issue instructions to this effect. On receipt of the profiles, I will let you have my views with as little delay as possible."

Mr. Leonard replied to Mr. Chamberlin on Aug. 2, 1912, as follows:—"I beg to acknowledge receipt of your letter of July 23, expressing your apprehensions regarding the modifications referred to in my letter of the 18th ult. I note you refer to your company's 'strict rights,' to which you also referred in yours of the 18th ult., for which reference I can find no authority in the various acts and agreements relating to the construction of the Eastern Division.

"You have apparently been misinformed in regard to the reported changes in grade, as no change whatever in any of the ruling grades has been contemplated, but merely such trifles as slight local sags in the grades across soft swamps, which will not in any way affect the hauling capacity of locomotives, and which, if found desirable to lift out in the future for any unforeseen reason, can be effected more cheaply than at present contract prices, and will make a more solid road bed than is being made under similar circumstances today by using the peat for embankments.

"I suggested in my letter of July 19 that your Chief Engineer, or Assistant Chief Engineer, discuss with our Chief Engineer any proposed changes and report to you in regard to same, because, you will see from the above, these are simply details too trifling to occupy either your attention or mine, and the suggestion in my letter of July 19 should be quite sufficient for your purposes, or perhaps it would be still simpler and quite as efficient for you to get your information through your district engineers, after consultation with the district engineers of the Commission, in the usual way."

On Nov. 21, 1912, Mr. Leonard wrote to the Minister of Railways as follows:—"In reference to the charges made in the newspapers that the gradients on the N.T.R. have been injuriously altered, I beg to point out, that the only change in gradients made by the Commission since Sept. 30, 1911, was to allow a few sags to remain, where there have been subsidences and across soft muskegs, which it would be inadvisable, from an engineering point of view, to fill at present, to be operated temporarily or permanently as velocity grades. The presence of such sags in the railway does not injuriously affect the economical operation of the road. The same trains, carrying the same loads, making the same time, with the same expense and the same degree of safety and comfort, can be handled over a road in which such sags, or velocity grades, exist as on a road of the same ruling gradient in which there are no such sags or velocity grades.

"By introducing these sags, all of which are well within velocity grade limitation, the Commission will: 1. Save a large amount of money in the construction of the railway; 2. Expedite the completion of the road; 3. Should it become advisable, for any unforeseen reason in the future, to eliminate these sags, it can be done at one half the cost that the present contract prices call for; 4. In one case it has been found necessary to raise the grade in a cutting, the material in which is so soft and wet that it is impracticable to construct a line on the original grades, and in this instance the grade has been kept well within the limits of velocity grade practice, and the gradient can be reduced at any time, if it should ever be found desirable, by filling in the lower portion with suitable material; 5. The concensus of opinion of the following engineers, who have been in the employ of the Commission for years, in their sworn testimony before the Commission investigating the construction of the N.T.R., is that velocity grades are not only unobjectionable, but might have been introduced permanently into the railway, and would have greatly reduced the cost of the road:—G. Grant, Chief Engineer; C. O. Foss, District Engineer, District A.; A. E. Doucet, District Engineer, District B.; A. G. Macfarlane, District Engineer, District F.; G. L. Mattice, Assistant District Engineer, District D.; J. W. Porter, Assistant District Engineer, DistrictB.; A. N. Molesworth, ex District Engineer, District C. & D.; H. L. Bucke, Division Engineer, District D. & F.

"I find that the gradients on which the original Quebec bridge was partially built were 1% on either side, and the new bridge will necessarily be built to the same grades. I also find that the gradient approaching the Quebec bridge from the east side, including the Chaudiere bridge, was 1%, which cannot be altered. In New Brunswick I find in the middle of a division a grade 13 miles long of 1.10% against east bound traffic, and in Quebec, in the middle of another division, 11 miles of 1.10% grade against west bound traffic, each of which will limit the hauling capacity of locomotives over these divisions to the same extent as if the whole division had been located on these grades.

"I am sending, herewith, for your information, five blue print profiles, showing all the changes in gradients which have been effected since Sept., 1911.

"Mr. Grant's evidence is not yet in type, but from conversation I have had with him, which is confirmed by Mr. Staunton, I know his views to be as above stated."

The return states that there have been no departures from original instructions, as regards curves and bridges or other permanent structures.

In connection with the foregoing it will be of interest to note what W. F. Tye said in his recent presidential address before the Canadian Society of Civil Engineers, and which is given in full in this issue. His remarks on momentum grades will be found on pg. 107.

It was reported at a meeting of the Public Accounts Committee of the Manitoba Legislature, Jan. 5, that the amount of taxes paid to the Province by the C.P.R. was $100,000, and by the Canadian Northern Ry. $40,000. The Railway Taxation Act provides that 2% on the gross earnings of railways be levied, and a resolution asking the government to enforce the act in the case of the C.P.R. and the C.N.R. was lost on the casting vote of the chairman.

Canadian Northern Railway, Construction, Betterments, Etc

Sir Donald Mann, Vice President, returned to Toronto Feb. 10, from the Pacific Coast. In an interview he is reported as stating that the line to Port Arthur will be completed this fall. Work on the Pacific section of the line is progressing satisfactorily; there are 17 bridges to be built on the section between the mountains and Kamloops, B.C. It is proposed to have two outlets on the Atlantic Coast, one at St. John, N.B., and the other at Halifax. It is hard to tell, he is reported as stating, at Vancouver, when trains will be running through into that city, but it is hoped to be able to start a freight and a passenger service by Aug., 1914. At Winnipeg, Sir Donald is reported as stating that he was quite satisfied with the progress of the lines in the west. It is not expected to do much in the way of new construction on branch lines this year; track will be laid on lines already graded, but the principal work will be centered on the completion of the main lines, on which construction is in progress in Ontario and British Columbia.

Montreal - Ottawa-Port Arthur Line.—Rapid progress is reported as being made with the construction of the two bridges on the Montreal-Hawkesbury section at the back of Montreal. The substructure work will be completed so as to enable the Dominion Bridge Co. to make a start with the superstructures early in the summer.

On the section between Ottawa and Pembroke, Ont., there are two large bridges under construction across the Ottawa River—one at Shaw Falls, 1,800 ft. long, the other at Portage du Fort, 1,300 ft. long.

The Board of Railway Commissioners has approved of location and revised location plans for the following sections of the line:—In Nepean Tp., mileage 5.53 to 14.3; through Jones Tp., mileage 277.9 to 281.2 from Ottawa; through North Bay, at mileage 344; and through unsurveyed territory, mileage 189.1 to 192.2 from Sudbury Jct.

Press reports, Feb. 11, stated that about 200 miles of track had been laid on the line between Sudbury and Port Arthur. Of this 70 miles are said to have been laid west of Sudbury, and 130 miles east of Port Arthur. About 60% of the grading is reported to have been completed, and it is expected to have the balance done by the end of the year, and track laid on the entire section of 450 miles.

Canadian Northern Ontario Ry.—The Board of Railway Commissioners has authorized the building of a line across the C.P.R. near Donlands station, York Tp., to connect the Toronto-Sudbury line with the Toronto-Ottawa line to the North Toronto Station at the head of Yonge St.

Sir Wm. Mackenzie, President, is reported as stating, Feb. 5, that it is expected to put a regular passenger service in operation between Toronto and Ottawa, in June or July.

Press reports state that arrangements are being made under which the C.N. Ry. interests and the G.T.R. will build a joint station and hotel in Hamilton, Ont.

An agreement was reached, Feb. 5, with the St. Catharines, Ont., City Council, under which the company will build its line between Toronto and Buffalo, through St. Catharines, erecting a general traffic bridge across the old Welland canal. The city is to grant a bonus of $100,000.

Surveys for lines in Western Ontario are in progress at various points between Hamilton and Windsor. —. Congdon has been in London for some time, and another engineer has been in St. Thomas. Mr. Congdon is quoted as stating that the pro [illegible] on the C.N.R. obtaining a lease of the London and Port Stanley Ry. St. Thomas papers are advocating the interests of the route through that city, and the taking over of the Pere Marquette Rd.'s Canadian lines.

Canadian Northern Ry.—Recent press reports quote Sir Wm. Mackenzie, President, as having stated that work will be started in the spring on the building of a second track between Port Arthur and Winnipeg, and the further enlargement of the terminal facilities at the head of the lakes.

The company graded 655.82 miles of track in Manitoba, Saskatchewan and Alberta, and laid 303.63 miles of track during 1912. Grading, but no tracklaying was done on the following lines:—MANITOBA—Winnipeg Northern Ry., 35.88 miles; Wroxton to Yorkton, 28.7 miles. SASKATCHEWAN—Extension of Grosse Isle line, 35.6 miles; Canora, northerly, 19.3 miles; Craven, northeasterly, 8.00 miles; Carlton, northerly, 10.1 miles; Alsask, southeasterly, 50 miles; Vonda, northerly, 15.00 miles; Prince Albert-Battleford line, 36.66 miles; Jackfish branch, 2.34 miles. ALBERTA—Strathcona-Calgary line, 11.1 miles; Red Deer-Lacombe line, 7.8 miles; Oliver, north, 14.7 miles; Peace River line, 53 miles; Bruderheim, east, 2.5 miles; Camrose, southeasterly, 10 miles; Calgary, south, and Macleod-Pincher line, 48.3 miles.

Tracklaying and grading was done on the following mileages, part of the grading having been done in 1911: SASKATCHEWAN—Swift Current line, grading 40.6 miles, tracklaying 9.62 miles; Melfort-Humbolt line, tracklaying 4.69 miles; Moose Jaw line, grading 1.20 miles, tracklaying 2.00 miles; Goose Lake line, grading 104.57 miles, tracklaying 100.02 miles; Delisle line, grading 4.3 miles, tracklaying 3.70 miles. ALBERTA—Brazeau line, grading 50 miles, tracklaying 45.26 miles; Canadian Northern Alberta Ry., grading 87.45 miles, tracklaying 50.42 miles; Morinville line, grading 1.90 miles, tracklaying 17 miles; Strathcona-Camrose line, grading 5.87 miles, tracklaying 46 miles; Vegreville-Calgary line, grading 0.85 mile, tracklaying 24.92 miles.

It was reported, Feb. 12, that construction work is to be started at once on the proposed cut off from near Portage la Prairie to Stuartburn, east of Morris, Man.

The Saskatchewan Minister of Railways informed the Legislature recently that the Canadian Northern Ry., under an agreement with the Government, is building an extension of the DeLisle branch from near MacRorie through the Duck Lake country, southerly and southwesterly. It is expected to complete this line this year.

The Saskatchewan Legislature has passed a measure granting the company an extension of time within which to build the lines under the contract with the Province. Under the legislation of 1908 the C.N.R. undertook to build 410 miles of line, and under the legislation of 1909 the company undertook to build a further 545 miles of branch lines, the Province in each case guaranteeing the company's bonds. Of the first mentioned mileage 310 miles are in operation, and the remaining mileage, with the exception of one branch which has been abandoned, is under construction; about 400 miles of the branches to be built under the 1909 contract are practically completed or in operation, and the remaining mileage, with the exception of the Hartney extension of 65 miles, is under contract.

Canadian Northern Western Ry.—Application is being made to the Alberta Legislature for the incorporation of a company with power to build the following lines:—[illegible] from Calgary southeasterly [illegible] an authorized line between Cochrane and [illegible] the western boundary of the province. Short, Woods, Biggar and Shawcross, Edmonton, are solicitors for applicants.

Canadian Northern Pacific Ry.—During 1912 track was laid from Sumas to Hope, 41.64 miles, making the total track laid on the line 78.25 miles. The line from Hope to Yellowhead Pass, 421.82 miles, is under construction. On the section from Hope to Stillwater Flats, 274.91 miles, the contractors are the Northern Construction Co., Vancouver; between Stillwater Flats and the Yellowhead Pass, 146.91 miles, the contractors are the Northern Construction and Foley, Welch and Stewart. Track is reported to have been laid practically to Yale, and to have been started above Yale, for the purpose of getting in bridge material.

It is reported that Engineer J. Barthen has been transferred from Kamloops to North Bend, B.C., on construction work, and that B. A. Savage has been transferred to section 1.

A branch line from Kamloops to Vernon, Lumley and Kelowna, 132 miles, is under construction.

A contract has been let to the Northern Construction Co. for the building of a branch line from Lulu Island Bridge to Steveston, 10.2 miles. The work, which is light, is to be completed within six months. The principal feature on the line will be a trestle about a mile and a half long over the muskeg near Woodward's Slough.

Plans have been filed with the Registrar at New Westminster, B.C., for this line, mileage 5 to 15; these already having been approved by the Minister of Railways. The contract let to the Northern Construction Co. covers the grading, wooden bridges, culverts, etc., from a crossing of the north arm of the Fraser River, just west of New Westmintser to Steveston, near the mouth of the Fraser River. There are no particular engineering features, the gradients being level, and no cuttings. The work is to be proceeded with at once, and finished early in the summer.

Port Mann Terminal.—J. Montgomery, Toronto, arrived in Vancouver, Feb. 7, to take charge of construction on the terminals at Port Mann. He is reported as stating that his instructions were to get all the preliminaries arranged so that construction could be started Mar. 1. He added:—"The buildings to be erected now are as follows: Fifteen stalls of what will later be enlarged to a 42 stall locomotive house, a repair shop, coaling station, oil storage, house and a general storehouse for train equipment. The buildings are to be of the most modern and permanent construction. The repair shop will be 150 by 300 ft., with room for doubling the length. With the repair shop will be a complete foundry, blacksmith shop—in fact, all the outfit needed for repair of locomotives, freight cars, and passenger coaches.

Vancouver Terminals.—Reports state that the British Columbia Government has approved plans for the entrance of the company's lines into Vancouver, the company agreeing to spend $4,000,000 in reclaiming False Creek during the next five years. The C.N.R. will build a sea wall on the False Creek water front, then pump out the water in the flats and fill in the 200 acre area. Entry to this area will be secured through a tunnel about half a mile long. Terminal facilities will be provided at a cost of about $4,000,-

[illegible] C.P.R., or [illegible]

[illegible] Island Branch, and the laying out of ter- [illegible]

[illegible]

Railway Rolling Stock Notes.

[illegible] from the American Locomotive Co.

[illegible] distributing cars from the Hart-Otis Car Co. Following are the chief dimensions:—

[illegible]	[illegible]

[illegible] ordered the following rolling stock: 21 [illegible]

The C.P.R., between Jan. 13 and Feb. 12, received the following additions to rolling [illegible] Car and Foundry Co.; 6 steel frame box cars from the National Steel Car Co.; 108 steel frame box cars from the Standard Car Co.; 425 steel frame box cars from the American Car and Foundry Co.; and 385 [illegible]

The G.T.R., between Jan. 14 and Feb. 12, [illegible] real Locomotive Works; 3 switching loco- [illegible] 746 box cars, from the Pressed Steel Car [illegible]

[illegible] passenger locomotives. There are at present under construction there 5 ten wheel pas- [illegible] pected to be completed in January, and the remainder to be completed at intervals of [illegible] cars: 40 box cars, 40,000 lbs. capacity, and [illegible] considerable additions to the machinery of the shops to facilitate the work under way. These additions will consist of lathes, boring mills and shapers.

Following are the chief dimensions of [illegible] struction cars, which the Canadian Northern Ry. recently ordered from the Hart-Otis Car Co., and which are being built by the Canadian Car and Foundry Co.; and for 100 similar cars ordered by J. D. McArthur Co., and 50 similar cars ordered by the Toronto, Hamilton and Buffalo Ry., all of which have been noted in previous [illegible]

[illegible]	[illegible]
Length of hopper door opening	16 ft. 8½ ins
[illegible]	[illegible]

The Western Coal and Coke Co. has ordered one 10 wheel freight locomotive from the Montreal Locomotive Works. Follow- [illegible]

[illegible]	[illegible]
Wheel base, driving	10 ft. 6 ins.
Wheel base, total	20 ft 8 ins.
[illegible]	[illegible]
Weight on drivers	84,000 lbs.
Weight on engine truck	25,000 lbs.
[illegible]	[illegible]
Tubes, length	12 ft 3 ins
[illegible]	[illegible]
Heating surface, total	1,176 sq. ft.
Heating surface, firebox	115 sq. ft.
[illegible]	[illegible]
Axles	7½ by 9 ins.
[illegible]	[illegible]

Reinforced Concrete Telegraph Pole Tests.

[illegible] wires with an ultimate strength of 80,000 [illegible] of concrete. The loading was applied at a [illegible] deflection and permanent set of the pole [illegible] flection of 73 ins. and failure resulted under a deflection of 78 ins.

Mainly About Transportation People.

SIR EDMUND OSLER has been elected a trustee of the Mackay Companies, in place of the late R. A. Smith.

G. YALE, for the past six years Mechanical Superintendent, Montreal Harbor, died in Montreal, Feb. 8, aged 60.

J. P. MULLARKEY, railway contractor, arrived in Montreal, Feb. 17, from a visit of several months to Europe.

Miss R. Hill, daughter of **J. J. HILL**, Great Northern Ry., was married at St. Paul, Minn., Jan. 30, to Dr. E. Boeckmann.

J. B. FAIRGRIEVE, vessel owner, etc., who died in Hamilton, Ont., recently, left an estate valued at $152,000, to be divided among relatives.

Dr. E. P. Bucke, who died at London, Ont., Feb. 15, was a brother of **H. L. BUCKE**, Division Engineer, G.T. Pacific Ry., Superior Jct., Ont.

C. R. HOSMER, director, C.P.R., has been elected Vice President of Canadian Cottons, Limited, succeeding the late Sir Edward Clouston.

C. O'DELL, formerly Roadmaster, G.T.R., Toronto, was presented with a fur coat, by the office staff, Feb. 1, on his transfer to Hamilton.

J. W. STEWART, President, Pacific Great Eastern Ry., arrived in Victoria, B.C., from Europe, via New York, Feb. 3. His health is reported to be fully restored.

R. W. SCOTT, who has been appointed Superintendent of G.T.R. Terminals, Montreal, is a brother of Lady Whyte, wife of Sir Wm. Whyte, director, C.P.R.

A. H. CHAVE, heretofore General Purchasing Agent, Canada Car and Foundry Co., is reported to have been appointed General Assistant to the Executive.

R. W. LEONARD, Commissioner, National Transcontinental Ry., and his wife, who left Ottawa Jan. 23 for Great Britain, are expected to return early in March.

GUY TOMBS, General Freight Agent, Canadian Northern Ry. lines east of Ottawa, and Mrs. Tombs, left Montreal, Jan. 31, for a trip to Florida and Cuba.

R. W. LEONARD, Commissioner, National Transcontinental Ry., has been elected a fellow of the Royal Colonial Institute. Mrs. Leonard has been elected an Associate.

The marriage is announced for Mar. 6, in Toronto, of Miss Mary Hanna, daughter of **D. B. HANNA**, Third Vice President, Canadian Northern Ry., to Victor Lewis.

W. P. ANDERSON, Chief Engineer of the Department of Marine and Fisheries, Ottawa, has been appointed a Companion of the Order of St. Michael and St. George.

P. Morris, a Michigan Central Rd. employe, who was killed in the yards at Windsor, Ont., Feb. 1, was a brother of **H. MORRIS**, Roadmaster, Pere Marquette Rd., St. Thomas, Ont.

F. S. WILEY, of Thomas Marks & Co., Port Arthur, Ont., who left there about the middle of January, with his wife and child, for the south of France, is expected to return during May.

F. E. GIBBS, formerly Chief Grain Inspector for the Dominion Government, at Fort William, Ont., and latterly a member of the Dominion Grain Commission at Winnipeg, has retired from the board.

SIR WM. VAN HORNE, is one of the four collectors of paintings, who have presented four important works of art to Dr. W. Bode, the art expert, to be handed over to the Royal Museums in Germany.

A. E. WILBY, heretofore on the engineering staff of the Esquimalt and Nanaimo Ry., Victoria, B.C., is reported to have been appointed resident engineer in that city for the Department of Marine and Fisheries.

JOHN PATTERSON, who died in Hamilton, Ont., recently, left an estate of over $400,000, the main portion of which is in Dominion Power and Transmission Co.'s stock. The widow is the principal legatee.

Prof. ALEX. JOHNSON, LL.D., who died at Ottawa, Feb. 10, for several years made a specialty of hydrography, and performed considerable research work in Canadian waters.

Mrs. J. P. C. Burpee, who died at St. John, N.B., Feb. 8, was mother of **F. F. BURPEE**, of the Eastern Steamship Co., and of **G. B. BURPEE**, of the C.P.R., both of St. John.

F. H. CLERGUE, the principal promoter of the North Ry., from Montreal to Hudson Bay, gave an address on "Hudson Bay and its relation to the commerce of Montreal," at the Canada Club luncheon in Montreal, Feb. 10.

F. Price,
Superintendent of Passenger Service, Grand Trunk Railway.

G. H. PEDLAR, President of Pedlar People, Ltd., Oshawa, Ont., and his wife, have given $10,000 to the Oshawa hospital, for the construction of a surgical wing as a memorial to their son, the late G. H. Pedlar, Jr.

G. Mc L. BROWN, European Manager, C.P.R. and F. C. Salter, European Traffic Manager, G.T.R., have been elected members of the Royal Colonial Institute's trade and industrial committee, which has been formed recently.

T. H. WATSON, Vice President and Managing Director, Canada Machinery Corporation, has bought the Toronto residence of Mrs. Hammond, widow of the late H. C. Hammond, formerly President of the Northern Navigation Co., for $55,000.

MRS. LOGAN, wife of R. S. Logan, Vice President, G.T.R., Montreal, and her two sisters, are said to be the principal legatees under the will of their uncle, D. P. Rankin, which was filed at St. Louis, Mo., Feb. 15. The estate is valued at over $4,500,000.

J. S. HENDERSON [illegible] B., on his removal to Truro, N.S., where he has been appointed Chief Dispatcher, Intercolonial Ry.

JAS. RYAN, who for some years has been chief clerk to the G.T.R. roadmaster at Hamilton, was on Feb. 1, presented with a gold watch, by the men of the department, on his promotion to be chief accountant in the Superintendent's office there.

JAS. V. WELSH, who has been for many years engaged in railway building in Canada and the United States, as a sub contractor with Foley, Bros. and Larson, and latterly with the Canadian Northern Ry., died at Port Arthur, Ont., Feb. 1, aged, 52.

J. H. GORDON, Superintendent, Hamilton Division, A. M. Adams, Agent, and J. W. Ralston, dispatcher, G.T.R., Hamilton, Ont., were each presented with a purse of gold, Feb. 19, by their former associates at Toronto, in connection with their recent removal to Hamilton.

W. J. SPROULE, M. Can. Soc. C.E., for 30 years assistant engineer to the Montreal Harbor Commissioners, from which position he retired in 1911, died in Montreal, Feb. 6. One of his sons, G. St. G. Sproule, M.Sc., is engaged in the C.P.R. testing laboratory, Montreal.

R. MURPHY was presented with a diamond pin and a pair of diamond and pearl cuff links, by the office staff of the Canadian, National and American Express companies, Feb. 7, upon retiring from the position of general agent of these companies in Montreal.

SIR WILLIAM VAN HORNE, who was visiting in Kingston, Jamaica, recently, is reported to have been negotiating for the acquirement of a large hotel in connection with a proposed extension of the C.P.R. steamship service for the development of a tourist trade.

J. INMAN SEALBY, who was associated with his cousin, T. H. Ismay, in the founding of the White Star Line, and who retired from active connection with it, on its absorption by the International Mercantile Marine Co., died at Keswick, Eng., Feb. 9, aged 84.

JNO. H. SULLIVAN, who died Jan. 27, at Valleyfield, Que., aged 78, had charge of the exploration surveys for the Quebec and Lake St. John Ry. in 1870, and was extensively employed on surveys for public works. Of five sons three are civil engineers, one, Alfred, being in the G.T.R. employ.

G. CLARK, and G. F. Nornabell, Stratford, Ont., have each received a commission to act as a Notary Public, for the purpose of taking affadavits made necessary by any United States or Canadian law requiring evidence as to the condition of locomotives running in the United States, or entering into Canada.

G. D. SMITH, General Superintendent, Canadian Steel Foundries, died suddenly in Montreal, Jan. 30, aged 48. After serving his apprenticeship in the C.P.R. mechanical department, he became associated with K. W. Blackwell, in the enterprises which have developed into the Canadian Steel Foundries.

J. M. CURRY, for many years Secretary-Treasurer of the Rhodes, Curry Co., Amherst, N.S., was recently presented with a silver tea service by the citizens at a public dinner, on the occasion of his leaving Amherst, for Montreal, to become associated with the Canadian Car and Foundry Co.'s sales department.

C. J. McKEOUGH, whose appointment as Trainmaster, District 15, Stratford Division, Ontario Lines, G.T.R., Stratford, was announced in our last issue, was born at St. Marys, Ont., Oct 16, 1874, and entered G. T.R. service, Aug. 15, 1892, since when he has been, to Dec. 1, 1902, brakeman; Dec. 1, 1902, to Jan. 22, 1913, conductor.

[illegible] BIRMINGHAM, [illegible] Vice-President and Managing Director, Canadian Locomotive Co., and his wife, who are in California, are giving to the Oliver Mowat Memorial Hospital at Kingston, Ont., a cottage [illegible] $5,000 to accommodate at least four persons in the incipient stages of tuberculosis.

J. B. MURPHY, who has been appointed Chief Dispatcher, Reid Newfoundland Co., St. John's, Nfld., was born at Charlottetown, P.E.I., Mar. 18, 1888, and entered Reid Newfoundland Co.'s service, June 24, 1903, since when he has been, to Jan. 24, 1910, consecutively, operator and station agent; Jan. 24, 1910, to Jan. 17, 1913, dispatcher, St. John's.

B. GOODWIN, who died in Campbellton, N.B., Feb., 5, was reported to be nearly a hundred years old. He had been a locomotive driver in England, and started work in Canada on the construction of the Windsor Branch in 1865, going to the old Windsor and Annapolis Ry. in 1867, and to the Intercolonial Ry. in 1872. He retired from active work in 1887.

W. J. ROONEY, whose appointment as Superintendent of Plant, G.T.P.R. Telegraph, Winnipeg, was announced in our last issue, was from 1896 to 1902, in Toronto Electric Light Co.'s service; 1902 to 1905, in Great North Western Telegraph Co.'s construction department; 1905 to Jan., 1913, General Foreman of Construction, G.T.P.R. Telegraphs.

J. J. ROSE, who has been appointed Canadian Passenger Agent, Union Pacific System, Toronto, was born in Toronto, and was for 25 years in C.P.R. service, as Travelling Passenger Agent, and up to about a year ago, as chief clerk in the Passenger Department, Toronto. For the past year, he has been Travelling Passenger Agent for the Robt. Reford Co., there.

C. E. BENJAMIN, who has been appointed General Passenger Agent, C.P.R. Pacific Steamship Service, Montreal, entered C.P.R. service in 1898, as Travelling Passenger Agent at St. Louis, Mo., and in 1906 was appointed General Agent, C.P.R. Atlantic Steamship Lines, Chicago, Ill., remaining there until his transfer to Montreal, as General Tourist Agent, in 1910.

F. H. FISH, who has been appointed Trainmaster, Districts 20 and 21, Ontario Lines, G.T.R., Brantford, was born at Oakville, Ont., in 1871, and entered G.T.R. service in the Locomotive Department, Toronto, in 1890. From 1892 to 1900 he was a fireman; 1900 to Oct. 1, 1908, locomotive driver; Oct. 1, 1908, to Jan. 23, 1913, Road Foreman of Locomotives, London, Ont.

CAPTAIN LARNDER, of the cable repair steamship Mackay-Bennett, was presented with a silver loving cup, R. D. Legette, one of the officers, with a gold watch, and Jas. Hendman, boatswain's mate, [illegible] by the Dominion Government, Feb. 7, in recognition of their services in rescuing the crew of the Nova Scotian schooner Caledonian.

R. WHALEY, heretofore General Superintendent, Electric Division, New York Central & Hudson River Rd., New York City, has been elected Vice President of the New York, New Haven & Hartford Rd., in charge of operation, succeeding H. J. Horn, who will give his entire attention to the operating department of the Boston & Maine Rd., of which he is also Vice President.

JOHN GRAY, whose appointment as General Agent, G.T.R., Toronto, was announced in our last issue, was born at River Beaudette, Que., Sept. 28, 1863, and entered G.T.R. service Oct., 1880, since when he has been, to 1883, assistant at Parkhill, Ont.; 1883 to 1889, operator and ticket clerk at various points; 1889 to Jan., 1913, agent at Milverton, Southampton, Hespeler, Ingersoll, St. Catharines, Ont.; Buffalo, N.Y., and Hamilton, Ont., successively.

C. G. Bowker,
General Superintendent, Eastern Lines, Grand Trunk Railway.

G. A. Stone,
[illegible], Grand Trunk Railway.

H. J. RUSSELL, who has been appointed Assistant to the Superintendent, Reid Newfoundland Co., St. John's, Nfld., was born at Musgrave Harbor, Nfld., Dec. 21, 1891 and entered Reid Newfoundland Co.'s service, Sept. 12, 1906, since when he has been, to June 25, 1907, stenographer, Newfoundland Express Co.; June 25, 1907, was appointed secretary to the General Superintendent, and just prior to his present appointment, Jan. 17, was also acting as Chief Despatcher.

H. HULATT, whose appointment as Commercial and Traffic Superintendent, G.T. Pacific Ry. Telegraphs, Winnipeg, was announced in our last issue, was born in London, Eng., Feb. 15, 1883, and entered G.T. P.R. Telegraphs service in 1907 as secretary to the Manager, and was promoted to chief clerk, Jan. 1, 1910, since when he has been the Manager's chief assistant in the organization and operation of the G.T.P.R. commercial telegraph system and time service department.

At the recent annual meeting of the Mackay Companies at Boston, Mass., President Mackay, in alluding to the death of R. A. SMITH, of Toronto, one of the trustees of the company, which occurred last year as the result of an automobile accident, said:—"It is with the deepest regret that we record the death of one of our co trustees. His sound judgment, conservativism and unwavering support greatly aided your trustees in their deliberations, and we greatly deplore his loss."

C. M. HAYS, President, G.T.R. and G.T. P.R., who lost his life in the Titanic disaster, left an estate valued at $762,292 almost entirely to his wife, with the exception of small legacies to his four daughters. Included in this amount are real estate in Canada and the United States, $268,216; bonds and stocks, $383,298.90; cash in banks, $60,181.01. He had $158,093 in life assurance, payable to his wife, $25.000 payable to his sister and brother, and annuities payable to his daughters.

A. E. MACDONALD, whose appointment as General Claims Agent, Canadian Northern Ry., Winnipeg, was announced in our last issue, was born at Woolwich, Eng., Dec. 11, 1870, and was brought to Canada at an early age. He entered railway service in the spring of 1900, since when he has been, to 1901, in the yard office, C.P.R., Winnipeg; 1901 to May 17, 1903, Special Agent, C.P.R., Winnipeg; May 17, 1903, to Jan. 1, 1913, Chief Special Agent and Claim Adjuster, Canadian Northern Ry., Winnipeg.

C. FORRESTER, whose appointment as Superintendent, Stratford Division, Ontario Lines, G.T.R., Stratford, was announced in our last issue, was born at Wanstead, Ont., Mar. 5, 1876, and entered G. T.R. service, July 15, 1891, since when he has been, to Aug. 23, 1899, operator at various stations on the Middle Division; Aug. 23 1899, to Aug. 20, 1906, dispatcher, London, Ont.; Aug., 1906, to Oct. 20, 1907, night chief dispatcher, London, Ont.; Oct. 20, 1907, to July 1, 1910, Chief Dispatcher, London, Ont.; July 1, 1910, to Jan. 22, 1913, Trainmaster, Stratford, Ont.

E. O. MACKAY, formerly in the Great Lakes vessel trade, who died in Hamilton, Ont., recently, left an estate valued at $117,053, over $100,000 of which is in Steel Co. of Canada stock. He also left $11,000 life assurance, payable to his widow and willed her the household effects and $5,000 a year. He left annuities and legacies varying from $500 to $10,000 to about 20 relatives, the legacies aggregating $50,000, and $10,000 to the Hamilton Health Association. The residue is to be divided between the Hamilton Health Association, Boys' Home, Girls' Home and the Orphan Asylum.

J. E. FITZGERALD, who has been appointed Trainmaster, Central Vermont Ry., St. Albans, Vt., was born at Northfield, Vt., and entered railway service at the age of

17, and has been, consecutively, to June 4, 1881, section man and section foreman, New York and New England Ry., and yard foreman, Central Vermont Ry., White River Jct., June 4, 1881, to June 24, 1882; road brakeman, June 24, 1882, to Nov. 27, 1901, freight conductor, Nov. 27, 1901, to Sept. 18, 1907, Yardmaster, White River Jct.; Sept. 18, 1907, to Feb. 10, 1913, Yardmaster, St. Albans, Vt.

J. RIOUX, whose appointment as Assistant to the President, Reid Newfoundland Co., St. John's, Nfld., was announced in our last issue, was born at Trois Pistoles, Que., Apr. 18, 1867, and entered railway service, July, 1883, since when he has been, to 1885, operator on construction, C.P.R., Mattawa, Ont.; 1885 to 1888, in operating department; 1888 to 1889, dispatcher, North Bay, Ont.; 1889 to 1898, Assistant Chief Operator, Montreal; 1898 to 1900, Chief Dispatcher, Reid Newfoundland Co.; 1900 to 1905, Assistant Superintendent; 1905 to Dec 31, 1912, Superintendent.

F. A. GABY, Assoc. Am. Inst. E.E., who has been acting Chief Engineer of the Ontario Hydro Electric Power Commission since the resignation of P. W. Sothman, last July, has been appointed Chief Engineer. He graduated from the University of Toronto in 1903, and after several years with the Canadian Electric Co. as erecting and supervising engineer, went to Winnipeg, where he was assistant engineer on the work of preparing the designs and specifications for the municipal hydro electric plant. He has been with the Ontario Hydro Electric Power Commission since 1907, and was appointed Assistant Chief Engineer in 1908.

W. E. LADLEY, whose appointment as Superintendent of Motive Power, Reid Newfoundland Co., St. John's, Nfld., was announced in our last issue, was born at Leeds, Eng., Nov., 1875, and was educated at Port Huron, Mich. He entered transportation service in 1892, since when he has been, to 1897, machinist apprentice, G.T.R., Port Huron, Mich.; 1897 to 1905, consecutively, Machine Foreman, Erecting Foreman and General Foreman, G.T.R., Port Huron, Mich.; 1905 to 1907, General Foreman, Central Vermont Ry., St. Albans, Vt.; 1907 to 1910, assistant superintendent of various automobile factories; 1910 to Jan. 1, 1913, Master Mechanic, Chicago and Alton Rd., Bloomington, Ill.

WALTER WHITE, who has been appointed Trainmaster, Districts 22 and 23, Stratford Division, Ontario Lines, G.T.R., Palmerston, was born June 4, 1866, and entered G.T.R. service in 1882, since when he has been, to 1883, messenger to Superintendent, Toronto Union Station; 1883 to 1889, operator; 1889 to 1896, secretary and chief clerk to Assistant Superintendents, London and Toronto; and subsequently, successively, chief clerk to Superintendent, Montreal; secretary to Manager; chief clerk to Superintendent, Toronto; Superintendent of Toronto Terminals; Assistant Trainmaster, Palmerston, Ont.; Joint Agent, G.T.R. and Wabash Rd., Black Rock, N.Y., and Chief Train Dispatcher, London, Ont.

W. A. COOPER, who has been appointed Manager, Sleeping, Dining and Parlor Cars and News Service, C.P.R., Montreal, and whose portrait appears in this issue, was born at Montreal, Mar. 22, 1871, and entered railway service, Feb., 1886, since when he has been, to June, 1891, secretary to Assistant General Manager, G.T.R.; June, 1891, to Dec., 1894, chief clerk to General Superintendent, Eastern Division, C.P.R., Montreal; Dec., 1894, to July, 1897, Inspector, Sleeping and Dining Car Department, same road; July, 1897, to Dec., 1905, Assistant Superintendent, same department; Dec., 1905, to Aug., 1908, Superintendent, same department; Aug., 1908, to Feb. 1, 1913, General Superintendent, same department.

P. R. TODD, who was recently elected President, Bangor and Aroostook Rd., Bangor, Me., was born at Toronto in 1859, and educated at Ottawa. He commenced railway work as a telegraph operator with the St. Lawrence and Ottawa Ry., now part of the C.P.R., remaining there until 1875, when he was appointed Canadian Agent for the Ogdensburg and Lake Champlain Rd., and later was General Travelling Agent, National Despatch Line, Chicago, Ill.; Commercial Agent, New York, West Shore and [illegible] Rd.; and [illegible] General Freight Agent [illegible] 1897, [illegible] General Freight and Passenger Agent, Canada Atlantic Ry., Ottawa, Ont., and [illegible] in the U. S.

J. H. Gordon,
Superintendent, Hamilton Division, Ontario Lines,
Grand Trunk Ry.

J. McGillivray,
General Manager, Inverness Railway and Coal Co.

W. L. W[illegible] Superintendent of Transportation, G.T.R., Toronto, was born in Toronto, and entered [illegible] been, to 1894, operator and ticket clerk at [illegible] 1897, dispatcher at London, Ont.; 1897 to 1901, in service of G.N.R. in Minnesota and Washington, and Pacific Coast Ry. and Pacific Coast Steamship Co.; June, 1901, to July, 1902, dispatcher, G.T.R., Island Pond, Vt.; July to Dec. 1, 1902, dispatcher, Rutland Rd., Rutland, Vt.; Dec. 1, 1902, to May 1, 1907, dispatcher, G.T.R., London, Ont.; May 1, 1907, to July 1, 1910, Chief Dispatcher, G.T.R., Stratford, Ont.; July 1, 1910, to Jan. 22, 1913, Trainmaster, G.T.R., Stratford, Ont.

A. E. DUFF, who has resigned as District Passenger Agent, G.T.R., Toronto, to enter the real estate business in Winnipeg, was born at Sherbrooke, Que., May 1, 1872, and entered G.T.R. service in 1887, since when he has been, water boy on tie train, east of Montreal; 1888 to 1889, section hand, switch man and clerk at various stations east of Montreal; 1890 to 1895, operator at St. Hilaire, Upton, Actonvale and South Durham, Que.; 1895 to 1904, agent at Beloeil, Que.; North Stratford, N.H.; and St. Lambert, Que.; 1904 to 1907, Travelling Passenger Agent, Montreal; 1907 to 1908, General Agent, Passenger Department, Winnipeg; 1908 to 1911, General Agent, Passenger Department, G.T.R., and District Passenger Agent, G.T. Pacific Ry., Winnipeg; 1911 to Feb. 28, 1913, District Passenger Agent, G.T.R., Toronto.

PHELPS JOHNSON, who has been elected President, Canadian Society of Civil Engineers, was born in Orange County, N.J., and from 1872 to 1882 was, successively, engineer at Hawkins Iron Works, Springfield, Mass., and Assistant Engineer, Wrought Iron Bridge Co., Canton, Ohio. He came to Canada in 1882, as Manager and Engineer, Toronto Bridge Co., now Dominion Bridge Co., and in 1888 was appointed Chief Engineer, Dominion Bridge Co., Lachine, Que., and in 1892, he was appointed General Manager, which position he still holds. He is also President, St. Lawrence Bridge Co., which was formed in conjunction with the Canadian Bridge Co., for the erection of the steel superstructure of the Quebec Bridge. He has been a member of the society since 1893, and was elected a member of the council in 1911, for three years.

A. F. DION, who has been appointed Traffic Agent, Quebec Harbor Commission, was born at L'Islet, Que., Oct. 1, 1871, and entered railway service, Apr. 26, 1887, since when he has been, to Nov. 12, 1889, operator and agent, Ottawa Division, C.P.R.; Nov. 12, 1889, to Sept. 26, 1890, baggageman, Intercolonial Ry.; Sept. 26, 1890, to Aug. 15, 1893, operator and agent, New York and New England Rd.; Aug. 15, 1893, to Apr. 30, 1894, operator and freight clerk, Canada Atlantic Ry.; Apr. 30, 1894, to Nov. 4, 1900, operator and agent, Eastern Division, C.P.R.; Nov. 4, 1900, to Jan. 6, 1903, Terminal Agent, Hawkesbury and Shawinigan Falls, Great Northern Ry. of Canada; Jan. 6, 1903, to June 30, 1908, Terminal and Freight Agent, Quebec and Lake St. John Ry., Quebec; June 30, 1908, to Feb. 28, 1913, Terminal and Freight Agent, Canadian Northern Quebec Ry., Montreal.

J. E. MORAZAIN, who has been appointed Assistant Superintendent, District

3. Eastern Division, C.P.R., Que., was born at Wheatland, Que., July 31, 1875, and en- [illegible] freight clerk, C.P.R., Drummondville, Que.; Aug. 1, 1890, to Jan. 9, 1891, night operator at Foster; Jan. 9, to Aug. 12, 1891, day operator, Richford, Vt.; Aug. 15 to Sept. 26, 1892, night operator at Sutton, Que.; Sept. [illegible] agent and day operator, Highlands, Que.; Feb. 8 to Aug., 1894, day operator, Richford, Vt.; Aug. to Oct., 1894, relieving agent and operator; Oct., 1894, to May 27, 1895, day operator, [illegible] 1901, agent, Highlands, Que.; Sept. 24, 1901, to Nov. 15, 1908, agent, Mile End, Que.; Nov., 1908, to Feb., 1913, General Agent, Operating Department, Quebec, Que.

[illegible] acting Superintendent, Central Vermont [illegible] Craigvale, Ont., Feb. 6, 1868, and entered railway service, Dec. 10, 1883, since when he has been, to March, 1884, relieving operator and agent, Northern and North Western Ry.; Mar., 1884, to June, 1886, agent, same road, Nottawa and Glen Huron, Ont.; June, 1886, to Apr., 1887, agent, same road, Palgrave, Ont.; Apr., 1887, to Nov., 1888, agent, same road, Sundridge, Ont., continuing in the service on the absorption of the N. & N.W.R. by the G.T.R., Feb., 1888; Nov., [illegible] agent, G.T.R., Hagersville, Ont.; July, 1898, to June, 1906, agent, same road, Merritton, Ont.; June, 1906, to Apr., 1907, agent, Central Vermont, Ry., St. Albans, Vt.; Apr. to Aug., 1907, agent, same road, Brattleboro, Vt.; Aug., 1907, to Jan. 29, 1913, General Agent, same road, New London, Conn.

[illegible] Terminals Manager, Canadian Northern Ry., G.T. Pacific Ry. and National Transcontinental Ry., Winnipeg Joint Terminals, was born at Fishers, N.Y., Nov. 22, 1872 and entered railway service, Apr. 1, 1888, [illegible] yard clerk, Lehigh Valley Rd., Buffalo, N.Y.; Aug. 1, 1891, to Apr. 1, 1892, night yard master, same road, Buffalo, N.Y.; Apr. 1, [illegible] same road, Manchester, N.Y.; Nov. 1, 1898, [illegible] Pennsylvania Division, same road; Apr. 1, 1901, to Feb. 1, 1905, General Yardmaster, same road, Sayre, Pa.; Feb. 1, to Aug. 1, [illegible] Haven and Hartford Ry., Worcester, Mass.; [illegible] Providence, R.I.; Feb. 1, 1907, to Oct. 1, 1908, General Yardmaster in charge of Terminals, Lehigh Valley Rd., Buffalo, N.Y.; [illegible] same road, Buffalo, N.Y.

[illegible] construction of the Intercolonial Ry. in [illegible] Dominion Department of Public Works in [illegible] as Public Works Engineer and Inspector of Dykes for the B. C. Government. In 1911 he was appointed Chief Engineer, and Inspecting Engineer of Railways for the B. C. Government. He has been a member of the society since 1887, and is also a member of the Institute of Civil Engineers, England, and of the American Society of Civil Engineers.

Grand Trunk Pacific Railway Construction for 1913.

A Winnipeg press despatch, Feb. 14, states that the G.T. Pacific Ry. construction programme [illegible] the pushing of work on the main line. Track is laid from the east Rau Shuswap, 1,123 miles west of Winnipeg, and from the west to 195 miles east of Prince Rupert, B.C. A large amount of grading has been done from the east to 126 miles east of Fort George. Clearing has been done on this 126 miles. From the west grading has been practically completed to the Endaka River, mileage 341 from Prince Rupert. The grading, bridge building, track laying and ballasting will be pushed on as fast as possible.

A. E. Macdonald, [illegible] Railway.

It is expected to complete the branches into Brandon, Man., Moose Jaw, Weyburn, Battleford, Sask., and Calgary, Alta. The line from Regina to the International Boundary will also be completed. These lines have all been under construction during the past [illegible]

Canadian Transfer Co.—The following officers and directors were re-elected for the current year at the recent annual meeting in Montreal: President, C. Cassils; Directors, H. Paton, G. R. Starke, Sir Montagu Allan, F. W. Molson; General Manager [illegible]

A deputation waited on the Ontario Government [illegible] over 7,000

C.P.R. Eastern Lines Appropriations.

The appropriations for the work to be carried out on the C.P.R. Eastern Lines during the year have been approved by the President, Sir Thomas Shaughnessy, and will involve an expenditure of about $16,000,000. This sum will not all be spent on new work, but at least $10,000,000 will be utilized in completing works which were commenced last summer, including a portion of the new lake shore line, from Glen Tay to Agincourt, Ont., which is expected to be completed this year, the extension from St. John to Farnham Junction, and the Forsythe St. branch at the east end of Montreal.

The majority of the new work for which appropriations have been made is principally double tracking on various parts of the eastern lines, and this will involve the expenditure of nearly $6,000,000. The main line from Islington to Guelph Junction, Ont., on the London Subdivision will be double tracked for 30 miles, which is necessitated by the increase of traffic and will prove a considerable relief to the depot congestion. It is contemplated to have the work finished by November. On this stretch there are a few small bridges to be built, but none of any great importance. Tenders have been called for, but contracts have not yet been let.

It is proposed to double track portions of the main line between Romford the junction between the main line and the Toronto-Sudbury Branch—and Port Arthur, covering about 135 miles. The total distance between these two points is 553 miles. Last summer 75 miles of this line were double tracked at the points which most facilitated operation of traffic. It is intended to eventually double track the whole of this stretch, and when completed it will be a great advantage to the haulage of grain after navigation on the Great Lakes is closed. The intention of the C.P.R. is to carry out the second tracking at various points, so as to facilitate operation of trains. The lightest work will be done first and the heavy work along the north shore of Lake Superior will be completed later on. Surveys are in progress and will be continued. The principal items of heavy work will be due to changes of alignment and grading revisions.

Another important work to be commenced this year is the double tracking of a small stretch of 15 miles between Agincourt and North Toronto. Apart from the work of erecting two steel viaducts over the Don Valley the work on this line is by no means heavy. The other work to be finished this year includes the Interprovincial and James Bay Ry. extension from from Kipawa northerly, grade revision on the Sault Ste. Marie branch from Algoma to Sudbury.

The G.T.R. Has Been Indicted at Buffalo, N.Y., for conspiracy to violate sec. 6 of the Interstate Commerce law, in connection with the transportation of theatrical companies from Detroit to Buffalo, and from Buffalo to Toronto. It is charged that by means of a contract which was ostensibly for advertising on theatre programmes, rates were unreasonably reduced. The contract for 1910-11 called for monthly payments by the G.T.R. of $300 a sum claimed to be grossly in excess of the true value, the amount of which was reached by deducting [illegible] from the regular published rate. Similar indictments were recently returned against the New York Central Lines, when a plea of guilty was entered and a fine of $10,000 paid.

Canadian Railway
AND
Marine World
ESTABLISHED 1898

Devoted to Steam and Electric Railway, Marine, Express, Telegraph, and Railway and Canal Contractors' Interests.
Official Organ of the various Canadian Transportation Associations.

ACTON BURROWS, LIMITED - Proprietors
70 Bond Street, Toronto, Canada

ACTON BURROWS, A.Can.Soc.C.E.
Managing Director and Editor-in-Chief
AUBREY ACTON BURROWS - Secretary and Business Manager.

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Associate Editor - - DONALD F KEIR
Mechanical Editor - FREDERICK H. MOODY, B.A.Sc.

Canadian Advertising Representative - W H HEWITT
United States Representative - A FENTON WALKER
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SUBSCRIPTION PRICES, INCLUDING POSTAGE:

TORONTO AND WEST TORONTO POSTAL DELIVERY, $1.25 a year.

To other places in CANADA, and to NEWFOUNDLAND AND GREAT BRITAIN, $1 a year.

To the UNITED STATES and other countries in the Postal Union, except those mentioned above, $1.50 a year, or six shillings sterling.

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The best and safest way to remit is by express money order. Where one cannot be obtained, a post office money order or bank draft, payable at par in Toronto, may be sent. Cheques or drafts not payable at par in Toronto cannot be accepted. Remittances should be made payable to CANADIAN RAILWAY AND MARINE WORLD.

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ADVERTISING RATES furnished on application.

ADVERTISING COPY must reach the publishers by the 10th of the month preceding the date of publication.

TORONTO, CANADA, MARCH, 1913.

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Index to Canadian Railway and Marine World for 1912.

At the end of this issue is a very complete index to the contents of the volume for 1912, which, as in former years, will doubtless be fully appreciated by the large number of subscribers who bind Canadian Railway and Marine World for reference purposes.

Even a casual glance over the eight pages of closely printed matter will show the tremendous range of subjects covered and the thorough manner in which this paper represents the entire transportation interests of the whole Dominion, steam railway, electric railway and marine, as well as the subsidiary express and telegraph interests and railway and canal contracting work.

Each succeeding year sees an increase in the quantity of matter published, an improvement in its quality, and a rigid adherence to the policy of accuracy which the publishers consider as one of their most valuable assets.

During 1912 our business was most satisfactory. The receipts from advertising steadily increased and there was a marked advance in circulation. More new subscriptions were received than in any previous year in the paper's history, except the year of its establishment, 1898; the number of discontinuances was again very small indeed, and the present condition of the subscription list justifies the statement, after most careful enquiry as to the circulation of other publications, that there is no other transportation paper, published in any country, which has so large a circulation as Canadian Railway and Marine World, in proportion to the population of the country of publication. The evidence in support of this statement is at the disposal of our advertising customers.

Our circulation embraces all classes of transportation officials and reaches over 90% of all the officials who have any buying power. Advertisers who use our columns therefore know that they are covering the entire field and that no other advertising is necessary to reach any portion of it.

Our subscription lists are open for inspection by present and prospective advertisers at any time.

Passenger Association Meetings at Ottawa.

At the meetings held at Ottawa recently W. S. Cookson, Assistant General Passenger Agent, G.T.R., was elected Chairman of the Niagara Frontier Summer Rate Committee for 1913, and A. J. Collins, Manager and Secretary, Magnetawan River and Lakes Steamboat Co., was elected Chairman of the Great Lake and St. Lawrence River Rate Committee. Jas. Morrison, A.G.P.A., Canadian Northern Ry., Eastern Lines, is permanent Secretary of both committees.

The International Water Lines Passenger Association elected the following officers: President, G. C. Wells, Asst. to P.T.M., Canadian Pacific Ry. S.S. Lines, Montreal; Vice President, O. H. Taylor, P.T.M., Eastern S.S. Corporation, New York; Secretary, M. R. Nelson, C.C., P.D., Northern S.S. Co., New York; Executive Committee—J. C. Conley, G.P.A., Nor. Mich. Trans. Co., Chicago, 2 years; W. P. Hinton, G.P.A., Grand Trunk S.S. Lines, Winnipeg, 1 year; C. F. Bielman, T.M., White Star Line, Detroit, Mich, 1 year.

The next meetings of the three associations will be held at Buffalo, N.Y., in Jan., 1914.

Canadian Society of Civil Engineers' Officers, Etc.

Following are officers and members of council for 1913, as elected at the recent annual meeting:—

President—Phelps Johnson, Montreal.

Vice Presidents—F. C. Gamble, Victoria, B.C.; J. G. Sullivan, Winnipeg; H. H. Vaughan, Montreal.

Past Presidents—C. H. Rust, Victoria, B.C.; H. N. Ruttan, Winnipeg; W. F. Tye, Toronto.

Treasurer—E. Marceau, Montreal. Secretary—C. H. McLeod, Montreal.

Councillors—P. S. Archibald, Moncton, N.B.; W. D. Baillairge, Quebec; F. A. Bowman, Halifax; E. E. Brydone-Jack, Winnipeg; C. E. Cartwright, Vancouver; S. J. Chapleau, Ottawa; C. R. Coutlee, Ottawa; A. E. Doucet, Quebec; W. A. Duff, Winnipeg; G. H. Duggan, Montreal; R. J. Durley, Montreal; J. M. R. Fairbairn, Montreal; C. L. Fellowes, Toronto; Walter J. Francis, Montreal; H. E. T. Haultain, Toronto; J. A. Hesketh, Winnipeg; J. C. Kennedy, Montreal; W. B. MacKenzie, Moncton, N.B.; D. MacPherson, Ottawa; C. N. Monsarrat, Montreal; P. E. Parent, Quebec; A. F. Stewart, Toronto; T. H. White, Vancouver.

Railway Department of Saskatchewan.—Heretofore the railway, telegraph and telephone lines in Saskatchewan have been under the charge of the Department of Railways, Telegraphs and Telephones. The act constituting that department has now been amended by striking out the words "railways, telegraphs and" wherever they occur, and giving the Lieut.-Governor power to assign duties to the minister who shall be placed in charge of telephones. A second act has been passed creating a Department of Railways, authorizing the appointment of a separate Minister of Railways, and providing for the appointment of a Deputy Minister, engineers, and such other officials as may be necessary.

Alberta and Great Waterways Ry.—The Imperial Privy Council has given judgment in London, Eng., allowing the appeal of the Royal Bank against the decision of the courts in Alberta in the Alberta and Great Waterways Ry. case. The Bank holds the proceeds of the $6,000,000 bond issue of the railway, which had been guaranteed by the Province. The Legislature subsequently revoked the company's charter and directed the payment of the proceeds of the bond issue to the Provincial Treasurer. The Privy Council holds that although the Legislature had the right to revoke the charter, it could not appropriate the money, the lenders of which were entitled to claim to have it returned to them.

The G.T.R. and the Southern New England Ry.—A dispatch from Concord, N.H., Feb. 15, states that the G.T.R. has filed, in the Superior Courts of the State, a bill of equity to test the legality of the Southern New England Ry. The bill sets out that what purports to be the signature of the G.T.R. Co. by the late C. M. Hays, the President, is not the legal and binding signature of the G.T.R. Co., but was his unauthorized act and that it was beyond the power of the railway company to bind itself to the purchase of the shares of the capital stock of the alleged railway and that the act is therefore null and void.

Montreal Stock Yards Co.—The annual meeting was held at the G.T.R. offices, Montreal, Feb. 18. The following is the directorate for the current year:—W. Mann, President; W. B. Strachan, Vice President; M. M. Reynolds, J. Pullen, W. Wainwright, G. Bird, J. E. Dalrymple, A. McLaurin, J. W. Loud. F. H. Carlin is Manager, and E. D. Strachan, Secretary-Treasurer.

Canadian Pacific Railway, Construction, Betterments, Etc.

Atlantic Division.—[illegible] the C.P.R. [illegible] Montreal to Halifax, N.S. [illegible]

W. [illegible]

Eastern Division.—The Board of Railway Commissioners has authorized the opening for traffic of the second track for one mile from the G.T.R. diamond at St. Johns, to St. Johns Station, Que. This [illegible] Montreal terminal to St. Johns, on which 23.01 miles [illegible]

A second track has also been laid from Quebec Jct. to Ste Therese, Que., 7.33 miles.

The [illegible] a double track line, was opened for traffic Jan. 14. It is not finally completed, as the [illegible]

[illegible] from the main line 750 ft. south from Fosythe St., Montreal, to lot 396, Longue Pointe, [illegible]

Montreal Terminals, Etc.—Recent press reports state that a plan is being worked [illegible] West to a point northwest of the Mount [illegible] will be started early in the spring.

Campbellford, Lake Ontario and Western [illegible] Construction, is reported as stating, Feb. [illegible] parallel with the G.T.R. on the north side [illegible] shovels. There [illegible] n of the first 75 [illegible]

Ontario Division.—[illegible] h press re- [illegible] Ont., had been [illegible] from Islington, where the [illegible]

[illegible] with this project press reports state that [illegible] track line from Streetsville Jct. through Guelph, rejoining the main line at Galt.

The Board of Railway Commissioners has approved of location and plans for a new [illegible]

Lake Superior Division.—Six engineering [illegible] Sudbury and Port Arthur, Ont., completing [illegible] these points. The work is in charge of D. [illegible] Ont., Feb. 1.

Manitoba Division.—The Board of Railway Commissioners has authorized the opening for traffic of the second track between mileage 92.4 and 98, from Winnipeg. This is on the second track construction from Portage la Prairie into Brandon.

We are officially advised that the branch lines under construction Dec. 31, 1912, [illegible] Lauder to Boissevain, 37 miles; and a line from Virden to MacAuley, 22.5 miles.

Tenders are under consideration for the building of locomotive houses, frame sta- [illegible] on the Pembina section. J. C. Holden is Division Engineer at Winnipeg.

Saskatchewan Division.—A second track is being built east and west of Moose Jaw, which will give a complete second track from Regina to Chaplin. Of this 35.5 miles were reported under construction Dec. 31, 1912, with track laid on 14.2 miles. A second branch is also under construction on the Swift Current subdivision, of which 38 miles were reported as being under construction, Dec. 31, with 20.2 miles of track laid thereon.

The lines under construction on the division Dec. 31, were officially reported to [illegible] 95 [illegible] were laid during 1912; Estervan northwesterly, 55 miles, on which 20 miles o. track were laid during 1912; and Kerrobert northeasterly, 36 miles.

A Moose Jaw press report, Feb. 12 [illegible] 12 [illegible] of additional trackage in the yards, a new [illegible] About 40 miles of the branch line northwesterly is to be relaid with 85 lb. rails.

R. Armstrong, Superintendent, Saskatoon, is reported as stating, Feb. 4, that he expected a second track between that station and Sutherland would be built this year, and that a number of additional in- [illegible]

[illegible] the second track from Caron to Mortlach [illegible]

Alberta Division.—The branch lines and extensions officially reported to us as being [illegible] An extension of the Calgary and Edmonton Ry. Lacombe Branch, for 46.7 miles easterly, on which 32.8 miles of steel had been laid; a line from Sterling on the Alberta Ry. and Irrigation Co.'s line, easterly [illegible] easterly for 57.3 miles, on which 26.8 miles of track had been laid, and the Alberta Central Ry. for 65 miles west and north- [illegible]

Location plans have been approved by the Board of Railway Commissioners for the following mileages on the Alberta Central Ry., west of Red Deer:—Mileage 0 [illegible] 179.42. Although there has been some grading done on the line, we are officially advised that no track was laid during 1912.

The Board of Railway Commissioners has approved of revised location of the main line from mileage 27.05, the junction with the British Columbia Southern Ry., to mileage 32.89, Kootenay District, B.C.

British Columbia Division.—The Kootenay Valley Ry. was officially reported to [illegible] construction from Golden southerly for 60 miles, on which track had been laid for 41 miles, and from Colvalli northerly for 21.9 miles. The line will connect Golden on the British Columbia Division, with the Crowsnest branch at Colvalli, on the Alberta Division.

Track has been laid on the second track under construction east of Vancouver, from Vancouver to Pitt Meadows, 22.1 miles, and the traffic has been handled over the double track line since the end of 1912. This piece of line carries the second track as far as the head of the new yards which are being laid out at Coquitlam. The building of a second track is in progress as far east as Ruby Creek, 81 miles from Vancouver.

The excavation for the foundations of the new station at Vancouver are being made, the section of the work in progress being east of the present station on Granville St.

The following figures were given out in Vancouver, Feb. 7, as to the expenditures to be made during the current year on this division:—New terminals, etc., $2,488,700; enlarging steamship and river service, $360,700; bridge renewals and replacements, $265,000; roadbed and track improvements, $656,400; buildings, $30,000; miscellaneous items, $199,000.

Sir Thos. G. Shaughnessy, President, is reported as stating in New York, Feb. 5, that the new work to be undertaken on the western lines division includes the building of a four mile tunnel at the foot of the Selkirk Mountains.

On his way through Vancouver to Japan recently Vice President George Bury was reported as stating that large grain elevators would be built on the Pitt River, as a part of the development of the new yards at Coquitlam, but that the plans for this part of the development were still in the formative stage, both as regards the wharf accommodation and the elevators.

Track laying on the line on the north shore, known as the Port Moody and North Shore Ry. was reported completed Feb. 1. It is reported that it is intended to continue the line as far as the Bidwell Bay area, and then across the north arm of Burrard Inlet into North Vancouver.

Press reports state that tanks are to be built at Port Moody, Coquitlam, Mission Jct., Ruby Creek, and North Bend, for the storage of oil to be used in the engines running between Vancouver and North Bend.

The general programme for new lines, additions to existing lines, second track work, etc., on the western lines, to be undertaken during the current year were fully referred to in Canadian Railway and Marine World for February, pg. 76.

The Toronto, Hamilton and Buffalo Ry. is installing a telephone circuit for train dispatching, which is expected to be in operation in April. The dispatchers will be located at Hamilton as at present.

The Board of Railway Commissioners will take up the question of reciprocal demurrage, and its suggested application in Canada, at a sittings in Ottawa on April 15.

The Toronto, Hamilton and Buffalo Ry. is said to be arranging for telephone train dispatching.

Traffic Orders by the Board of Railway Commissioners.

The dates given for orders are those on which the hearings took place, and not those on which the orders were issued.

Approval of Supplement 5 to Canadian Classification.

18495. Jan. 14. The application of Canadian Freight Association on behalf of the railway companies, under sec. 321 of the Railway Act, for an order approving of Supplement, no. 5, to Canadian Classification 15, and of a supplemental to the said no. 5, both containing certain proposed increased, reduced, and additional ratings. Notice of the proposed increased ratings having been given in the Canada Gazette, and the Board having invited consideration thereof by the Canadian Manufacturers' Association, the Montreal Chamber of Commerce, the Ontario Wholesale Grocers' Guild, and the Boards of Trade of Montreal, Toronto, Winnipeg, and Vancouver; and the increased ratings objected to having been withdrawn or modified. It is ordered that the said Supplement and Supplemental, consolidated, revised and amended, and designated "Proposed Supplement 5," filed for approval by G. C. Ransom, Chairman, Canadian Freight Association, by his letter of Dec. 2nd, 1912, and amended by his letters of Dec. 23, 1912, and Jan. 10, 1913, in lieu of those first submitted, be, approved for consolidation with Canadian Classification 15, and Supplements 1, 2, 3 and 4 thereto: the new consolidated issue to be known as Canadian Freight Classification 16, and to become effective in Canada, March 1.

Export Dates on Pulpwood.

18577. Jan. 27. Re order 17286, Oct. 23, 1913, made upon the application of International Paper Co. and others, for an order disallowing tariffs of Canadian Pacific, Grand Trunk, Canadian Northern Quebec, and Temiscouata Railway Companies, increasing rates on pulpwood from Ontario, Quebec and New Brunswick to Eastern United States points, and suspending effective date of said tariffs until Feb. 4, 1913: it is ordered that the said tariffs be further suspended until March 1, 1913.

Rates on Ex-Lake Corn.

18578. Jan. 23. The application of Transportation Bureau of Montreal Board of Trade, for an order reducing the rate on ex lake corn for milling purposes from Georgian Bay ports to Montreal to the same basis as in effect on ex lake wheat, barley and oats, for milling purposes; and directing the C.P.R. to apply the mileage basis as in effect in Ontario and Quebec, as shown in its Tariff C.R.C. E1929, on corn meal shipped from Montreal to the company's points in New Brunswick. It is ordered:—1. That order 16394, dismissing the application for an order, as above stated, be confirmed. 2. That the mileage tariffs of the railway companies, from the ports of transhipment, on ex lake corn in carloads, for milling purposes, be revised so as to provide rates on the said corn that shall not, in any case, exceed the mileage tariff rates charged from the same ports of transhipment, and for the same distances, on ex lake wheat, oats, and barley in carloads, for milling purposes; the said revised tariffs to become effective not later than Feb. 10, 1913.

Classification of Paraffine Wax.

18581. Jan. 24. The application of E. A. Lesueur of Ottawa, for an order directing that paraffine wax, at present classified only under "Oils," be added also to the "Chemicals" list in Canadian Freight Classification. It is ordered that in the first supplement to Canadian Freight Classification 16 submitted for the Board's approval, paraffine wax be added to the Chemicals list of the said Classification and continued in the "Oils" list as at present.

Regulations For Transportation of Explosives.

General Order 100. Jan. 16. Re application of Canadian Freight Association, on behalf of railway companies operating in Canada, for approval of the "Regulations for the Transportation of Explosives." Upon its appearing to the Board that the general public safety demands that the receiving, forwarding, and delivering of explosives by railway companies be protected by special regulations; that it is desirable that such regulations, so far as possible, be uniform with respect to shipments from a foreign country into or through Canada, or from Canada to a foreign country, as well as within Canada; and that the regulations submitted for approval are the same as those adopted by the Interstate Commerce Commission, revised and modified to conform to the provisions of the Railway Act and the requirements in Canada; and in pursuance of the powers conferred upon it by secs. 26, 30, 286, and 287 of the Act, and of all other powers possessed by the Board in that behalf—it is ordered that the said regulations, attached hereto marked "A," certified by the Chief Commissioner of the Board, be prescribed for the observance of railway companies within the legislative authority of the Parliament of Canada which accept explosives for carriage; that the said regulations come into force on March 1; and that upon and after that date order 7881, Aug. 27, 1909, be rescinded.

[Owing to the length of the regulations it is impossible to find room to print them here. Editor.]

Heated Cars for Perishable Freight.

General Order 101. Feb. 1.—Re application of Sanitaris, Limited, of Arnprior, Ont., White & Co., of Toronto, the Board of Trade of Hamilton, and others, for an order directing railway companies to furnish during cold weather heated cars for the carriage of perishable freight: Whereas, by order 15819, Jan. 18, 1912, railway companies were directed forthwith to re-establish the system or systems in practice by them, during the winter of 1910-11, of carrying less than carload lots in heated cars, and to grant to shippers the rights and privileges of such shipping facilities in respect to such traffic as were in force upon their various lines during the said winter, until further order, or until the reasonableness of the withdrawal of such facilities could be passed upon by the Board; and whereas, by general order 98, Dec. 6, 1912, railway companies operating in Eastern Canada were required to furnish to any shipper a heated refrigerator car, or cars, for the carriage during cold weather of fruit, vegetables and eggs, in less than carload quantities, subject to certain conditions specified in the order; and whereas the C.P.R. Co. interprets the said general order as superseding order 15819, and has discontinued the heated car service in respect of freight shipments not specifically provided for in the general order, and notwithstanding the fact that it has been notified, under the direction of the Board, that the intention of the said general order was not in any way to cancel or supersede the provisions of the previous order, the company refuses to carry out the terms of order 15819; now therefore the Board orders that general order 98 shall not be taken or construed as in substitution for, or in cancellation of, order 15819, but as in addition thereto; and the C.P.R. is hereby directed forthwith to comply with and carry out the terms and requirements of order 15819.

Canadian Northern Railway Earnings, Etc.

[illegible]

	[illegible]	[illegible]	[illegible]	[illegible]
July	[illegible]	[illegible]	[illegible]	[illegible]
Aug.	[illegible]	[illegible]	[illegible]	[illegible]
Sept.	1,671,[illegible]	[illegible]	[illegible]	[illegible]
Oct.	[illegible]	1,04[illegible]	[illegible]	[illegible]
Nov.	[illegible]	[illegible]	[illegible]	212,[illegible]
Dec.	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]
Inc.	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

Canadian Pacific Railway Earnings, Etc.

Gross earnings, working expenses, net earnings, and increases or decreases, compared with the same period of 1911, from July 1, 1912:—

	Gross Earnings	Expenses	Net Earnings	Increase
July	$12,052,398 58	$7,604,221 68	$4,448,176 90	[illegible]
Aug.	12,251,715 87	7,533,790 21	4,717,925 66	[illegible]
Sept.	11,579,733 98	7,329,430 13	[illegible]	332,857 05
Oct.	13,060,397 80	7,999,510 61	5,060,887 19	379,782 44
Nov.	12,362,666 42	[illegible]	[illegible]	270,772 55
Dec.	12,219,278 72	[illegible]	4,395,719 51	[illegible]
	$73,526,191 37	$46,395,039 22	$27,131,152 15	[illegible]
Inc.	$10,959,825 38	$8,298,920,87	$2,660,904 51	

Approximate earnings for Jan., $[illegible],519,000, [illegible] for Jan., 1912.

The mileage operated was increased in Jan. to [illegible].

Grand Trunk Railway Earnings, Etc

Subject to audit, the accounts for the half year ended Dec. 31, 1912, show the following results:—

Gross receipts		$[illegible]
Working expenses		16,2[illegible]
Net receipts		$[illegible]
Deduct debit balance on account of rentals, outside operation and car mileage		[illegible]4,177
Total net revenue		$[illegible]
Net revenue charges for the half year, less credits		[illegible]
Balance		$[illegible],225,723
Deduct C.A.R. deficit	$[illegible]	
Deduct D.G.H. & M.R. deficit	170,216	
		[illegible]
Surplus		$[illegible]

This surplus, added to the balance of $[illegible] from June, 1912, makes a total of $[illegible],150 available for dividend, which will admit of the payment of dividend for the half year on the 4% guaranteed stock, and first and second preference stocks, and [illegible] leaving a balance of about $61,849 to be carried forward.

The accounts of the G.T. Western Ry., for the half year, after providing for the deficit of $[illegible] [illegible] surplus of $234,455, which is carried forward to the current half year's accounts.

TRAFFIC RECEIPTS OF THE SYSTEM

[illegible]

	[illegible]	[illegible]	Increase
G.T.R.	$[illegible]	[illegible]	$[illegible]
C.A.R.	[illegible]	[illegible]	[illegible]
G.T.W.R.	[illegible]	[illegible]	[illegible]
D.G.H. & M.R.	590,147	519,573	23,317
Total	$[illegible]	$[illegible]	$[illegible]

Grand Trunk Pacific Railway Earnings.

The earnings for the portion of the line being operated by the company, viz., the Prairie Section and the Lake Superior Branch, with a mileage of 1,104 miles, for January produced a [illegible].

In issuing the statement the company calls attention to a recent statement of the Chairman, to the effect that the results published for the first few months are for local traffic.

Press reports state that arrangements are being made for the absorption of the Esquimalt and Nanaimo Ry. into the C.P.R. system, the transfer to take place June 30. The E. and N. Ry. is owned by the C.P.R., but has so far retained its separate organization.

Birthdays of Transportation Men in March.

Many happy returns of the day to:—

W. [illegible], General Passenger Agent, C.P.R. Atlantic Steamship Lines, Montreal, born at Ottawa, Mar. 3, 1875.

P. S. Archibald, M. Can. Soc. C.E., Commissioner New Brunswick Coal and Ry. Co.'s Railway, and General Manager, Elgin and Havelock Ry., Moncton, N.B., born at Truro, N.S., Mar. 21, 1848.

George Bury, Vice President, C.P.R., Winnipeg, born at Montreal, Mar. 6, 1866.

Allan Cameron, Superintendent, Land Branch, Department of Natural Resources, C.P.R., Calgary, Alta., born near Owen Sound, Ont., Mar. 14, 1864.

F. G. J. Comeau, General Freight Agent, Dominion Atlantic Ry., Halifax, N.S., born at Meteghan River, N.S., Mar. 10, 1859.

A. E. Cox, General Storekeeper, Canadian Northern Ry., Winnipeg, born at Huddersfield, Eng., Mar. 12, 1863.

Hon. N. Curry, President, Canadian Car and Foundry Co., Montreal, born in King's county, N.S., Mar. 26, 1851.

C. T. Delamere, Assistant District Engineer, C.N. Ontario Ry., Montreal-Port Arthur Line, Port Arthur District, Port Arthur, Ont., born at Brainerd, Minn., Mar. 18, 1881.

Patrick Dubee, Secretary-Treasurer, Montreal Tramways Co., Montreal, and President Canadian Street Railway Association, born at Montreal, Mar. 4, 1876.

G. R. Fairhead, District Freight Agent, Canadian Northern Ry., Hamilton, Ont., born at Toronto, Mar. 6, 1882.

C. Forrester, Superintendent, Stratford Division, Ontario Lines, G.T.R., Stratford, born at Wanstead, Ont., Mar. 5, 1876.

C. O. Foss, M. Can. Soc. C.E., District Engineer, C.N. Ontario Ry. Montreal-Port John, N.B., born at Wentworth, N.H., Mar. 20, 1852.

H. M. Gain, Trainmaster, Districts 6 and 7, Belleville Division, Eastern Lines, G.T.R., Belleville, Ont., born at Lindsay, Ont., Mar 21, 1879.

R. A. Gamble, Assistant General Yardmaster, C.P.R., Winnipeg, born at Dublin, Ireland, Mar. 1, 1876.

H. W. Gays, General Manager, Ottawa and New York Ry., Ottawa, Ont., born at Brant, Erie Co., N.Y., Mar. 21, 1848.

E. P. Goodwin, Inspecting Engineer, National Transcontinental Ry., Ottawa, Ont., born at Baie Verte, N.B., Mar. 17, 1865.

J. Halstead, Division Freight Agent, C. P.R., Calgary, Alta., born at Bracebridge, Ont., Mar. 2, 1877.

R. M. Hannaford, M. Can. Soc. C.E., Assistant Chief Engineer, Montreal Tramways Co., Montreal, born there, Mar. 22, 1865.

C. A. Hayes, Freight Traffic Manager, G.T.R., Montreal, born at West Springfield, Mass., Mar. 10, 1865.

H. T. Hazen, M. Can. Soc. C.E., Department of Railways and Canals, Ottawa, Ont., born at Truro, N.S., Mar. 14, 1870.

Joseph Hobson, M. Can. Soc. C.E., Consulting Engineer, G.T.R., Hamilton, Ont., born at Guelph, Ont., Mar., 1834.

N. J. Holden, President, The Holden Co., Ltd., Montreal, born at Nobleton, Ont., Mar. 22, 1866.

A. F. [illegible], Master of Bridges and Buildings, Mountain Division, G.T.P.R., Prince Rupert, B.C., born at Rawdon, Que., Mar. 23, 1859.

Frank Lee, M. Can. Soc. C.E., Principal Assistant Engineer, C.P.R., Winnipeg, born at Chicago, Ill., Mar. 7, 1873.

R. W. Long, Division Freight Agent, G. T.R., Hamilton, Ont., born at Appin, Ont., Mar. 20, 1873.

F. W. [illegible], General Boiler Inspector, C.P.R. Western Lines, Winnipeg, born at Montreal, Mar. 30, 1858.

J. M. McKay, Superintendent, District 1, British Columbia Division, C.P.R., Revelstoke, born at Tiverton, Ont., Mar. 13, 1868.

Owen McKay, M. Can. Soc. C.E., Chief Engineer, Essex Terminal Ry., Walkerville, Ont., born in Ross tp., Renfrew co., Ont., Mar. 13, 1848.

H. H. McLean, K.C., M.P., Vice President, St. John Ry., St. John, N.B., born at Fredericton, N. B., Mar. 22, 1855.

Sir Donald D. Mann, Vice President, Mackenzie, Mann & Co., Ltd., and First Vice President Canadian Northern Ry., Toronto, born at Acton, Ont., Mar. 23, 1853.

D. J. Murphy, Jr., Superintendent of Transportation, Dominion Atlantic Ry., Kentville, N.S., born at Caledonia, Ont., Mar. 3, 1874.

C. B. Mutchler, Signal Engineer, G.T. Pacific Ry., Winnipeg, born at Pine Island, Minn., Mar. 8, 1879.

R. Patterson, Master Mechanic, G.T.R., Stratford, Ont., born at Brantford, Ont., Mar. 13, 1860.

F. W. Peters, General Superintendent British Columbia Division, C.P.R., Vancouver, born at St. John, N.B., Mar. 25, 1860.

E. H. Sewell, City Passenger Agent, C. P.R., Sherbrooke, Que., born at Quebec, Mar. 17, 1875.

C. J. Smith, General Manager, Richelieu and Ontario Navigation Co., Montreal, born at Hamilton, Ont., Mar. 10, 1862.

G. Somerville, agent, Canada Interlake Line, Toronto, born at Kingston, Ont., Mar. 21, 1855.

W. Y. Soper, Vice President, Ottawa Electric Ry. Co., Ottawa, Ont., born at Oldtown, Me., Mar. 9, 1854.

W. C. Starke, Travelling Car Service Agent, G.T.R., Montreal, born there, Mar. 9, 1867.

W. F. Tye, M. Can. Soc. C.E., ex-Chief Engineer, C.P.R., consulting engineer, Toronto, born at Haysville, Ont., Mar. 5, 1861.

G. W. Vaux, General Agent, Passenger Department, Union Pacific Rd., Chicago, born at Montreal, Mar. 21, 1866.

A. T. Weldon, General Freight and Passenger Agent, Black Diamond Steamship Line, Montreal, born at Dorchester, N.B., Mar. 6, 1876.

D. O. Wood, General Freight Agent for Ontario, Allan Line Steamship Co., Toronto, born at Kleinburg, Ont., Mar. 16, 1864.

Railway Finance, Meetings, Etc.

Canadian Pacific Ry.—A cable from Hamburg, Germany, states that $5,000,000 of C. P.R. stock has been listed on the Bourse there.

Detroit River Tunnel Co.—The Windsor, Ont., City Council is seeking to have an agreement fixing the assessment of this company's tunnel and line at $444,444.44, set aside. The agreement was only approved by the Ontario Railway and Municipal Board for one year. It was originally proposed to assess the value of the tunnel property to the water front at $2,500,000 and it is now proposed to assess the property right to the middle of the river, making $3,500,000 in all.

Duluth, South Shore and Atlantic Ry.—Equipment notes for $310,000 at 4½%, dated Dec. 1, 1912, due $31,000 half yearly from June 1, 1917, guaranteed by the C.P. R., have been placed on the New York market. These cover part cost of 400 ore cars, the total cost of which was $391,750, the balance being paid in cash.

Maritime Coal Co.—Application was made to the New Brunswick courts, Feb. 5, for an order for the winding up of this company. The hearing was adjourned to Mar. 5. The Von Hazen interests, controlling the company, are also interested in the North Shore Ry., running from Adamsville to Beersville, N.B., which gives an outlet for the produce of the M.C. Co.'s collieries to the Intercolonial Ry.

Minneapolis, St. Paul and Sault Ste. Marie Ry. Equipment notes, series E, for $3,180,000, with interest at 4½%, dated Jan. 1, and due $159,000 half yearly to Jan. 1, 1923, are being placed on the New York market at par. The equipment covered is all new and of large capacity, including 25 locomotives, 49 steel passenger and mail service cars, 1,500 steel frame box cars, 400 steel underframe ballast and flat cars, 300 ore cars and 20 cabooses.

Quebec Central Ry.—Holders of 7% income bonds, were required to surrender the same on or before Feb. 17, receiving in exchange their corresponding proportion of an issue of £338,000 of sterling 5% third mortgage bonds, redeemable in 50 years, issued under the provisions of chap 82, of the Quebec statutes of 1912. These bonds rank next after the 3½% second mortgage debentures, secured by the rental payable by the C.P.R., and principal and interest guaranteed by that company. In addition to the new bonds, the holders of the 7% income bonds, will receive a bonus of 10% of their face value in cash.

Holders of 3% second debenture stock were required to surrender the same on or before Feb. 17, receiving in exchange pound for pound, their proportion of an issue of £338,000 of 3½% second mortgage debenture stock, redeemable in 50 years. The new stock is a second charge on the company's property, and is secured by the rental payable by the C.P.R., and principal and interest is guaranteed by that company.

Toronto, Hamilton and Buffalo Ry. — There have recently been placed on the New York market, series A, 4½% equipment notes for $1,500,000, maturing in 20 half yearly payments of $75,000 each, to Feb. 1, 1923.

Victoria and Sidney Ry.—The Great Northern Ry. has increased its offer by $15,000 and the Victoria, B.C., City Council has accepted it as a settlement of the claims against the V. and S. Ry. The province and the city guaranteed the company's bonds to the amount of $300,000. The interest has been met by the province and the city for twenty years. The property was acquired by the Great Northern Ry., and negotiations have been going on as to betterments of the line. As a result of the bargain the G.N.R. will release the province and city from liability for the remaining years of the guarantee of interest, will pay the bonds on maturity, and will spend $200,000 on betterments on the line. The amount to be paid in respect of interest already paid by the province and city is $75,000. The agreement now only requires formal ratification.

White Pass and Yukon Route.—Gross earnings for 1912, $1,131,501, against $1,067,590 for 1911.

Wearing of Ear Mufflers by Trackmen.—The following circular has been issued by the General Manager of the Pennsylvania Rd. to all officers having in charge men working on tracks:—"The wearing of ear mufflers by trackmen renders their hearing less acute while being worn, and while it is not desirable to prohibit the practice of wearing mufflers, Foremen should be warned to pay particular attention to the men who wear them, in regard to warning the men of approaching trains, and all foremen should be advised of this at once."

Transportation Appointments Throughout Canada.

The information under this head, which is almost entirely gathered from official sources, is compiled with the greatest care, so as to ensure absolute accuracy. Anyone who may notice any omission or errors in the announcements will confer a favor by advising us.

Canadian Northern Ry.—JAS. H. CORMICK has been appointed Signal Engineer. Office, Winnipeg.

T. J. LOWE has been appointed Fuel Agent. Office, Winnipeg.

H. W. CULVER, heretofore locomotive driver, has been appointed Road Foreman of Locomotives, Winnipeg, vice J. A. Carroll, transferred to Winnipeg Joint Terminals' service.

J. M. BANNERMAN has been appointed Assistant to Chief Special Agent, General Claims Department, vice A. E. Macdonald, promoted. Office, Winnipeg.

P. K. MANAHAN, heretofore conductor, has been appointed Trainmaster, District 2, Western Division, vice F. W. Ross, transferred to North Battleford, Sask. Office, Saskatoon, Sask.

W. C. TURNER, heretofore Yardmaster, Saskatoon, Sask., has been appointed Assistant Trainmaster, District 2, Western Division, Saskatoon, and not Trainmaster, as mentioned in our last issue.

G. L. POUCHER has been appointed Yardmaster, Saskatoon, Sask., vice W. C. Turner, promoted.

F. W. ROSS, whose appointment as Trainmaster, District 3, Western Division, vice B. T. Chappell, was announced in our last issue, has his office at North Battleford, Sask., and not at Edmonton, Alta., as then mentioned.

F. CLARK, heretofore Assistant Locomotive Foreman, Dauphin, Man., has been appointed Locomotive Foreman at Radville, Sask., vice R. H. Mann, assigned to other duties.

R. H. MANN, heretofore Locomotive Foreman at Radville, Sask., has been appointed Night Foreman, there. This is a new position.

Canadian Pacific Ry.—N. DES BRISAY, who resigned the position of Travelling Passenger Agent, St. John, N.B., Oct. 31, 1912, to enter private business in Halifax, N.S., has resumed that position.

W. B. WAY, heretofore Assistant Superintendent, District 3, Eastern Division, Montreal, has been appointed Superintendent, District 1, Eastern Division, vice J. K. McNeillie, transferred. Office, Farnham, Que.

J. E. MORAZAIN, heretofore General Agent, Operating Department, Quebec, has been appointed Assistant Superintendent, District 3, Eastern Division, vice W. B. Way, transferred. Office, Montreal.

J. K. McNEILLIE, heretofore Superintendent, District 1, Eastern Division, Farnham, Que., has been appointed Superintendent, District 2, (Montreal Terminals), Eastern Division, vice J. R. Gilliland, transferred. Office, Montreal.

W. A. COOPER, heretofore General Superintendent, Sleeping, Dining and Parlor Cars and News Service, has been appointed Manager, same department. Office, Montreal.

A. RUTLEDGE, heretofore Assistant to General Superintendent, Sleeping, Dining and Parlor Cars and News Service, Montreal, has been appointed General Superintendent, same department, Eastern Lines. Office, Montreal.

T. G. HAWKINS, heretofore Inspector, Sleeping, Dining and Parlor Cars and News Service, has been appointed Assistant to General Superintendent, same department, Eastern Lines. Office, Montreal.

W. H. POWER, heretofore Car Agent, Sleeping, Dining and Parlor Cars and News Service, Glen Yards, Montreal, has been appointed Second Assistant Superintendent, same department. Office, Glen Yards, Montreal.

C. E. BENJAMIN, heretofore General Tourist Agent, has been appointed General Passenger Agent, Pacific Steamship Service. Office, Montreal.

J. R. GILLILAND, heretofore Superintendent, District 2, Eastern Division, Montreal, has been appointed Superintendent, District 5, Eastern Division. Office, Smiths Falls, Ont.

W. K. THOMPSON, heretofore Superintendent, District 3, Ontario Division, Toronto, has been appointed Superintendent, District 1, Ontario Division, vice T. Collins, transferred. Office, Toronto.

T. COLLINS, heretofore Superintendent, District 1, Ontario Division, Toronto, has been appointed Superintendent, District 4, Ontario Division, vice W. Coulter, transferred. Office, Toronto.

W. COULTER, heretofore Superintendent, District 4, Ontario Division, Toronto, has been appointed Superintendent, District 3, Ontario Division, vice W. K. Thompson, transferred. Office, Toronto.

W. A. Cooper,
Manager, Sleeping, Dining and Parlor Cars and News Service, Canadian Pacific Ry.

A. BAYARD SMITH, heretofore Relieving Agent, Sleeping, Dining and Parlor Cars and News Service, has been appointed Assistant Superintendent, same department. Office, Toronto.

P. G. CROMAR, heretofore Assistant Superintendent, District 3, Lake Superior Division, Schreiber, Ont., has been appointed General Yard Foreman, Ottawa, vice T. A. Wilson, promoted.

T. A. WILSON, heretofore General Yard Foreman, Ottawa, has been appointed Assistant Superintendent, District 3, Lake Superior Division, vice P. G. Cromar, transferred to Ottawa. Office, Schreiber, Ont.

H. F. MATHEWS, heretofore Assistant General Superintendent, has been appointed General Superintendent, Sleeping, Dining and Parlor Cars and News Service, Western Lines. Office, Winnipeg.

R. LOCKHART, hertofore Assistant Superintendent, Sleeping, Dining and Parlor Cars and News Service, Winnipeg, has been appointed Assistant to General Superintendent, same department, Western Lines. Office, Winnipeg.

J. M. WILLARD, heretofore [illegible], has been appointed Assistant Superintendent, Sleeping, Dining and Parlor Cars and News Service, Manitoba Division, vice R. Lockhart, promoted. Office, Winnipeg.

D. S. FRASER, heretofore Inspector, has been appointed Assistant Superintendent, Sleeping, Dining and Parlor Cars and News Service, Manitoba Division. Office, Winnipeg.

A. T. SHORTT, heretofore Master Mechanic, Alberta Division, Calgary, has been appointed Superintendent of Ogden Shops, Calgary, Alta.

G. W. WHITELEY, heretofore District Master Mechanic, Moose Jaw, Sask., has been appointed Master Mechanic, Alberta Division, vice A. T. Shortt, transferred. Office, Calgary, Alta.

J. H. McNEILL, heretofore Agent, Sleeping, Dining and Parlor Cars and News Service, Calgary, Alta., has been appointed Second Assistant Superintendent, same department, Alberta Division. Office, Calgary.

R. CUSHMAN, heretofore Soliciting Freight Agent, Winnipeg, has been appointed District Freight Agent, Saskatoon, Sask., vice E. Black, who has resumed his former position as chief clerk, Division Freight Office, Calgary, Alta.

H. G. GANSON, heretofore Superintendent, Sleeping, Dining and Parlor Cars and News Service, District 5, Vancouver, B.C., has been appointed Assistant General Superintendent, same department, Western Lines. Office, Vancouver.

F. A. TINGLEY, heretofore Assistant Superintendent, Sleeping, Dining and Parlor Cars and News Service, Vancouver, B.C., has been appointed Superintendent, same department, British Columbia Division. Office, Vancouver.

W. H. PRATT, heretofore Agent, Sleeping, Dining and Parlor Cars and News Service, Vancouver, B.C., has been appointed Assistant Superintendent, same department, British Columbia Division. Office, Vancouver.

The Dominion Express Co. will act as C.P.R. Freight and Passenger Agents for Manchester and district, Eng., reporting to London. Office, 1 Mount St., Manchester.

F. GLANZMANN & CO. are reported to have been appointed agents for the company's Austria-Canada steamship service, at Trieste, Austria.

S. ALTMAN is reported to have been appointed agent for the company's Austria-Canada steamship service, at Vienna, Austria.

Central Vermont Ry.—G. C. JONES, General Manager, has also been appointed Vice President, in charge of construction, transportation and maintenance. Office, St. Albans, Vt.

M. M. REYNOLDS, Vice President, G.T.R., and G.T.P.R., has also been appointed Vice President, C.V.R., in charge of financial and accounting departments. Office, Montreal.

S. S. RUSSELL, heretofore Superintendent of Car Service, has been appointed General Superintendent of Transportation, and his previous position has been abolished. Office, St. Albans, Vt.

T. A. SUMMERSKILL has been appointed Superintendent of Motive Power, vice J. E. Fitzsimons, acting Superintendent of Motive Power, transferred. Office, St. Albans, Vt.

J. F. KEEFE, heretofore Trainmaster, St. Albans, Vt., has been appointed Superintendent, Northern Division, vice C. E. Soule, resigned. Office, St. Albans, Vt.

J. E. FITZSIMONS, heretofore acting Superintendent of Motive Power, St. Albans, Vt., has been appointed Master Mechanic. Office, St. Albans, Vt.

J. R. FITZGERALD, heretofore Yardmaster, has been appointed Trainmaster, Districts 3 and 4, vice J. F. Keefe, promoted. Office, St. Albans, Vt.

JOHN McCRAW, heretofore General Agent, New London, Conn, has been appointed acting Superintendent, Southern Division, vice W. J. [illegible], resigned. Office, New London, Conn.

E. J. GUTHRIE, heretofore agent, Brattleboro, Vt., has been appointed agent at New London, Conn., vice J. McCraw, promoted.

C. J. GIBBS, heretofore cashier, has been appointed agent at Brattleboro, Vt., vice E. J. Guthrie, transferred.

Grand Trunk Ry.—G. H. JENKINS, heretofore chief clerk to General Purchasing Agent, has been appointed Assistant to General Purchasing Agent. Office, Montreal.

A. S. McCULLOCH has been appointed Assistant Engineer, Montreal Division, Eastern Lines. Office, Montreal.

W. E. WEEGAR, heretofore conductor, has been appointed Passenger Trainmaster, Eastern Lines, vice H. M. Gain, whose appointment as Trainmaster, Districts 6 and 7, Belleville Division, Eastern Lines, Belleville, Ont., was announced in our last issue. Office, Montreal.

C. FRENCH, heretofore dispatcher, Belleville, Ont., has been appointed Chief Dispatcher, Belleville Division, Eastern Lines, vice T. Cushing, appointed Trainmaster, Richmond, Que., as announced in our last issue. Office, Belleville, Ont.

H. A. PALMER has been appointed Assistant Engineer, Toronto Terminals. Office, Toronto.

JOHN GRAY, whose appointment as General Agent, Toronto, was announced in our last issue, has been appointed Freight Agent, there.

D. McCOOE, heretofore Superintendent of Grade Separation, Toronto, has been appointed Superintendent of Track, Toronto Terminals.

S. L. TEUSLER, heretofore Passenger Trainmaster, Toronto, has been appointed Passenger Trainmaster, Ontario Lines. Office, Toronto.

W. J. PIGGOTT, heretofore Trainmaster, Allandale, Ont., has been appointed Trainmaster, Districts 11 and 14, including Allandale Yard, Barrie Division, Ontario Lines. Office, Allandale.

W. J. LITTLE, heretofore Passenger Trainmaster, Northern Division, Allandale, Ont., has been appointed Trainmaster, District 12, Barrie Division, Ontario Lines. His former position has been abolished. Office, Allandale.

JAS. BOYD, heretofore in Resident Engineer's Office, Toronto, has been appointed Assistant Engineer, Hamilton Division, Ontario Lines. Office, Hamilton.

J. WILSON, heretofore Foreman of Bridges and Buildings, Hamilton, Ont., has been appointed Supervisor of Bridges and Buildings, Hamilton Division, Ontario Lines. Office, Hamilton.

G. STILSON, heretofore Roadmaster, Hamilton, Ont., has been appointed Supervisor of Track, Districts 17 and 19, Hamilton Division, Ontario Lines. Office, Hamilton.

C. [illegible], heretofore Roadmaster, [illegible], has been appointed Supervisor of Track, Districts 13 and 16, Hamilton Division, Ontario Lines. Office, Hamilton.

E. O. DUNN, heretofore dispatcher at London, Ont., has been appointed Chief Dispatcher at Brantford, Ont.

J. J. STONE has been appointed Assistant Engineer, London Division, Ontario Lines. Office, London.

W. A. SIEGNER has been appointed Assistant Engineer, Stratford Division, Ontario Lines. Office, Stratford.

WALTER WHITE, heretofore Trainmaster, Palmerston, Ont., has been appointed Trainmaster, Districts 22 and 23, Stratford Division, Ontario Lines. Office, Palmerston, and not Stratford as stated in our last issue.

P. J. Flynn,
Manager, Fort Garry Union Terminals, Winnipeg.

F. P. SISSON, heretofore Resident Engineer, Detroit, Mich., has been appointed Assistant Engineer, Detroit Division, Western Lines. Office, Detroit.

G. Cobb,
[illegible]

H. G. BALLEN, heretofore Draughtsman, has been appointed Supervisor of Bridges and Buildings, Detroit Division, Western Lines. Office, Detroit, Mich.

O. H. SESSIONS, heretofore Assistant Engineer, Detroit, Mich., has been appointed Assistant Engineer, Chicago Division, Western Lines. Office, Battle Creek, Mich.

G. SANDERS, heretofore Bridge and Building Foreman, Durand, Mich, has been appointed Supervisor of Bridges and Buildings, Chicago Division, Western Lines. Office, Battle Creek, Mich.

J. COTTER, heretofore Roadmaster, Battle Creek, Mich., has been appointed Supervisor of Track, from milepost 122, District 26, to milepost 252, District 25, Chicago Division, Western Lines, and his former position has been abolished. Office, Battle Creek, Mich.

H. E. BAILES, heretofore locomotive driver, has been appointed Trainmaster, District 25, including Battle Creek Terminals and exclusive of Durand and Port Huron Terminals. Office, Battle Creek, Mich.

R. KELLEY, heretofore conductor, has been appointed Trainmaster, District 26, Chicago Division, Western Lines. Office, Battle Creek, Mich.

W. J. HOGAN, heretofore Master of Transportation, Durand, Mich, has been appointed Trainmaster, Pontiac, Oxford and Northern Ry., and District 29, exclusive of Detroit and Port Huron Terminals. His former position has been abolished. Office, Pontiac, Mich.

C. HAWKINS, heretofore Roadmaster, Pontiac, Mich., has been appointed Supervisor of Track, Pontiac, Oxford and Northern Ry., and from milepost 35 at Pontiac, to Jackson, District 29. His former position has been abolished. Office, Pontiac, Mich.

J. LOCKHART, heretofore Roadmaster, Grand Rapids, Mich., has been appointed Supervisor of Track, from milepost 79 to Grand Haven District 27, and Ashley to Muskegon, District 28. His former position has been abolished. Office, Grand Rapids, Mich.

O. F. CLARK, heretofore Trainmaster, Pontiac, Mich., has been appointed Superintendent of Transportation of Western Lines, including Districts 25, 26, 27, 28, 29, and Pontiac, Oxford and Northern Ry., with direct supervision over all matters pertaining to transportation. Office, Chicago, Ill. The position of Master of Transportation, hitherto held by W. J. Hogan, Durand, Mich, has been abolished.

H. W. MATTHEWS, heretofore Trainmaster, Port Huron, Mich, has been appointed Passenger Trainmaster, Western Lines, including Districts 25, 26, 27, 28, 29, and Pontiac, Oxford and Northern Ry. Office, Durand, Mich.

J. MULLIN, heretofore Roadmaster, Durand, Mich., has been appointed Supervisor of Track, from milepost 7 to 79, District 27, Richmond to Milepost 35 at Pontiac, District 29. His former position has been abolished. Office, Durand, Mich.

G. B. PERDUE, heretofore General Yardmaster, Sarnia Tunnel, Port Huron, Mich., has been appointed Trainmaster, Districts 27 and 28, Detroit Division, Western Lines. Office, Durand, Mich.

F. TRANZOW, heretofore Roadmaster, Durand, Mich., has been appointed Supervisor of Track, from milepost 252, District 25, to Port Huron, including C.S. & M. District 25. His former position has been abolished. Office, Durand, Mich.

H. PLOWMAN, heretofore Roadmaster, Detroit, Mich., has been appointed Supervisor of Track, from Detroit to milepost 7, District 27, including Port Huron Terminals. His former position has been abolished. Office, Milwaukee Jct., Mich.

J. NOLAN, heretofore Roadmaster, Valparaiso, Ind., has been appointed Supervisor of Track, from Chicago to milepost 122, District 26, Chicago Division, Western Lines. His former position has been abolished. Office, Valparaiso, Ind.

T. J. IRVING, heretofore Trainmaster, Durand, Mich., has been appointed Division Engineer, Western Lines. Office, Chicago, Ill.

C. O. BUSSEY, heretofore Resident Engineer, Durand, Mich., has been appointed Superintendent of Bridges and Buildings, Western Lines. Office, Chicago, Ill.

J. H. REAGAN, heretofore General Roadmaster, Battle Creek, Mich., has been appointed Superintendent of Track, Western Lines. Office, Chicago, Ill.

Grand Trunk Ry.-Wabash Road.—J. C. CROMBIE, heretofore Master of Transportation, G.T.R., London, Ont., has been appointed Joint Superintendent, G.T.R. and Wabash Rd., vice C. G. Bowker, appointed General Superintendent, Eastern Lines, G.T.R., Montreal. Office, St. Thomas, Ont.

Intercolonial Ry., Prince Edward Island Ry.—D. M. CONDON, heretofore chief clerk to General Passenger and Ticket Agent, Moncton, N.B., has been appointed acting District Passenger Agent, Halifax, N.S., vice J. B. Lambkin, resigned.

Lehigh Valley Rd.—W. H. FLETCHER has been appointed Freight Agent, Buffalo, N.Y., vice C. I. Heckman, promoted.

C. I. HECKMAN, heretofore Freight Agent, Buffalo, N.Y., has been appointed Lake Freight Agent, Tifft Farm, Buffalo, N.Y., vice P. J. Fretz, transferred.

Montreal and Southern Counties Ry.—W. WAINWRIGHT, Vice President, G.T.R. and G.T. Pacific Ry., has also been appointed President, M. & S.C.R., vice E. H. Fitzhugh, resigned.

New York Central and Hudson River Rd.—MILES BRONSON, heretofore Superintendent of the Electric Division, has been appointed General Superintendent of the Electric Division, vice A. R. Whaley, resigned, and has also been appointed Terminal Manager. Office, Grand Central Terminal, New York.

GARRET H. WILSON, heretofore Assistant Superintendent, Grand Central Terminal, has been appointed Superintendent of the Electric Division, vice Miles Bronson, promoted, and has also been appointed Superintendent, Grand Central Terminal. Office, New York.

Reid Newfoundland Co.—H. J. RUSSELL has been appointed Assistant to the Superintendent, St. John's, Nfld.

J. B. MURPHY, heretofore dispatcher, has been appointed Chief Dispatcher, vice G. Cobb, appointed Superintendent, as announced in our last issue. Office, St. John's, Nfld.

J. E. ANGEL has been appointed General Foreman, Railway and Marine Shops, St. John's, Nfld.

Robt. Reford Co.—J. J. BRIGNALL, heretofore Travelling Passenger Agent, C.P.R., Toronto, has been appointed Travelling Passenger Agent, Robt. Reford Co., Agents, Donaldson Line, Toronto, vice J. J. Rose, resigned.

Union Pacific System.—The Traffic Department representation heretofore joint with the Southern Pacific Co., was discontinued Jan. 31.

J. J. ROSE, heretofore Travelling Passenger Agent, Robt. Reford Co., Toronto, has been appointed Canadian Passenger Agent, U.P. System, vice G. W. Vaux, promoted. Office, Toronto.

D. E. BROWN & McCAULEY, Ltd., have been appointed ticket agents, Vancouver, B.C.

J. B. COURTRIGHT has been appointed Travelling Freight and Passenger Agent, Vancouver, B.C.

G. W. VAUX, heretofore Passenger Agent, Toronto, has been appointed General Agent, Passenger Department, Chicago, Ill.

J. GOODSELL, heretofore Travelling Passenger Agent, Detroit, Mich., has been appointed City Passenger and Ticket Agent, Chicago, Ill.

Wabash Rd.—F. A. SULLIVAN, heretofore Local Freight Agent, Detroit, Mich., has been appointed Division Freight Agent, there, vice E. H. B. Cull, deceased.

Winnipeg Joint Terminals (Fort Garry Union Station), Winnipeg.—J. A. CARROLL, heretofore Road Foreman of Locomotives, C.N.R., Winnipeg, has been appointed Locomotive Foreman, C.N.R., G.T.P.R. and National Transcontinental Ry. Joint Terminals, Winnipeg.

Recent Saskatchewan Legislation.

The following acts affecting transportation interests have been passed by the Saskatchewan Legislature:

Canadian Northern Ry.—Amending previous acts guaranteeing certain securities for the construction of branch lines.

Grand Trunk Pacific Branch Lines Co.—Amending previous acts guaranteeing certain securities for building of branch lines. Also an act providing aid towards construction of terminals for G.T.P.B.L. Co. and G.T.P. Saskatchewan Ry. in Regina, Saskatoon and Prince Albert.

Railways.—Amending act respecting Department of Railways, Telegraphs and Telephones, and an act creating a separate Department of Railways.

Saskatchewan Co-operative Elevator Co.—Confirming agreement made Dec. 6, 1912, between the Government and the company.

S. S. Russell,
General Superintendent of Transportation, Central Vermont Railway.

Toronto, Hamilton and Buffalo Railway Earnings, Etc.

The following figures for the calendar year 1912 have been given out:—

	1912.	Increases.
Operating revenue	$[illegible]	$[illegible]
Operating expenses ...	[illegible]	[illegible]
Net earnings ..$	[illegible]	$[illegible]
Other income	[illegible]	9,679
Gross corporate income ..$	873,000	$303,443
Interest and equipment [illegible]	[illegible]	[illegible]
Surplus .. .. $	[illegible]	$[illegible]

Dominion Railway Subsidy Contracts.

[illegible]

CENTRAL RY. OF CANADA, Feb. 7.—From Ste. Agathe des Monts station toward Howard Tp., Argenteuil Co., Que., passing near Lake St. Joseph and St. Mary in a southerly direction, 15 miles.

DEPARTMENT OF RAILWAYS AND CANALS.

Car Ferry Terminal, Carleton Point, Prince Edward Island

SEALED TENDERS, addressed to the undersigned and marked "Tender for Car Ferry Terminal, Carleton Point," will be received at [illegible] 1913.

Plans, specifications and form of contract to [illegible] at the office of the Chief Engineer of the Intercolonial Railway at Moncton, N.B., and at the office of Horace McEwen, Superintendent of the Prince Edward Island Railway, Charlottetown, P.E.I.

Parties tendering will be required to accept the fair wages schedule prepared or to be prepared by the Department of Labour, which schedule will form part of the contract.

Contractors are requested to bear in mind, that tenders will not be considered, unless made strictly in accordance with the printed forms, and in the case of firms, unless there are attached the actual signature, the nature of the occupation, and place of residence of each member of the firm.

An accepted bank cheque for the sum of $50,000.00, made payable to the order of the Minister of Railways and Canals, must accompany each tender, which sum will be forfeited if the party tendering declines entering into contract for the work, at the rates stated in the offer submitted.

The cheque thus sent in will be returned to the respective contractors whose tenders are not accepted.

The cheque of the successful tenderer will be held as security, or part security, for the due fulfilment of the contract to be entered into.

The lowest or any tender not necessarily accepted.

By order,
L. K. JONES,
Asst. Deputy Minister and Secretary.

Department of Railways and Canals,
Ottawa, 18th February, 1913.

Newspapers inserting this advertisement without authority from the Department will not be paid for it.

CANADIAN PACIFIC RAILWAY COMPANY.

North Toronto Grade Separation.

NOTICE TO CONTRACTORS.

SEALED proposals will be received by the undersigned up to 12 o'clock noon on Thursday, March 20, for the construction of the substructures of subways at Davenport Road, Spadina Road, Howland Avenue, and Bathurst Street, at North Toronto.

Plans and specifications can be seen at the office of the Engineer of Grade Separation at No. 262 Avenue Road, where proposal forms can also be obtained.

The lowest, or any, tender, not necessarily accepted.

B. RIPLEY,
Engineer of Grade Separation.
Toronto, February 20th, 1913.

Electric Railway Department.

The Montreal Tramways Company's New Shops.

These shops have recently been opened for regular work, although the rolling stock department has been housed in its new offices in the shops for the last 18 months. The shops are situated near the village of Youville, a suburb of Montreal, near the Montreal Park and Island Ry's, Sault au Recollet line, about half a mile beyond the terminus of the St. Denis Street line of the city service.

The site, on Vervais Road, is about 30 acres in extent, with a frontage of 576 ft., and an average depth of about 2,000 ft. The shops are situated about half way back in this tract. The site being off the railway line, a special spur had to be built along Vervais Road from the St. Denis Street line.

The plant consists of a main building and several minor buildings at points around it, the majority having a direct connection, making an admirable arrangement for intercommunication in cold weather. The plant, looking at the south and north sides, is shown in figs. 1 and 2, respectively, and the plan of the shops and grounds, with approaches, in fig. 3.

The dimensions of the main building are approximately 425 ft. long by 269 ft. wide. Essentially, the main building consists of two units under the one roof, the two sections being separated by a transfer table down the centre between the two parts. In this particular, the shops are unique, the practice of covering in the transfer table not being usual. In the peculiar climatic conditions with which the rolling stock department is called upon to cope, an outside [illegible] a great deal of trouble from blocking up with snow in winter. The transfer table, fig. 4, 70 ft. 8 ins. wide, operates in a runway 346 ft. long, which contains four standard gauge tracks, laid with 80 lb. rails, on which the table operates. The motive power is a small, discarded electric railway motor, mounted on a projecting platform of the transfer table, and operated by a controller on a projecting platform adjoining. The runway has a cinder floor.

The building is built of brick throughout, on concrete foundations, with large window spaces on all sides. In consequence, the light penetrates into the centre of the shop at the transfer table. In addition, the skylights in the roof assist materially in making the interior light at all times during the day.

The transfer table runway is spanned by a 70 ft. truss, the nature of which is shown in figs. 1 and 2, and the interior view in fig. 4, the highest part of the building shown being the monitor that runs the full length of the runway. The sides of the monitor have swing sashes, operated from one end by a shaft.

The front section of the shop is what may be termed the motive power section, as all the repairs to the running gear and motors are attended to in it. This part of the shop is further subdivided into six sub sections—car hoists, overhauling section, wheel and axle shop, blacksmith shop, machine shop, and armature shop, all these several departments centering on the overhauling department, located down the centre of this half of the building.

Cars to be overhauled enter the building by the doors at either end, the principal entry being from the door to the south. Running on the transfer table, a car is quickly spotted on the required repair track, of which there are 14, laid with 80 lb. rails. Twelve of these repair tracks are equipped with car hoists, a construction that is rather novel in Canadian car shop practice. The construction and operating mechanism of the hoist is shown in figs. 5 and 6. The hoists are ranged in a row, just far enough over from the edge of the transfer table runway to give a clear passage way along that side.

On each side of the pit, at 10 ft. centres, is a 30 ft. length of 12 by 5 in. I beam, mounted on the upper ends of two 4 in., ¾ in. pitch, square threaded screws. This section of the shop, the length of the car hoist, is chambered out beneath at the same level as, and parallel to, the pit. The hoist screw passes through into this lower chamber, and is supported on a vertical thrust block nut in this chamber floor. On each of the screws, just above the chamber floor, is a worm gear, engaging with a worm on a shaft near the floor, parallel with the pit. The end of the parallel shaft on each side of the pit, mesh with bevel gears on the end of a cross shaft in the pit at the transfer table end. This shaft is an old 12A (30 h.p.) motor. Between each hoist, on the column next to the transfer table, there is an old K10 controller, above which is mounted a double throw switch, by which means either of the hoists can be operated at will.

In the use of the car hoists, it is the practice to place a section of I beam across the pit at the ends of the side I beams, under the ends of the cars, as shown in fig. 6, and by raising the screws by the motor the car body can be raised from its trucks and the latter run out, when the car body can again be lowered to a more convenient height for working, or if desired, lowered on shop trucks for removal to the paint or erecting shop, for further repairs, if the nature of the repairs is such that it would not be desirable to await the repair of the trucks before proceeding for final finishing. These car hoists have been found to be of great value in assembling new cars as received from the factory. The bodies, as received on the flat cars, can be raised, the flat car run out and the trucks run into position, and the body lowered thereon.

The pits, both under the car hoists and further back in the shop, are of concrete construction throughout. Under the car hoists, there is a supporting wall under the rail, but the balance is chambered along the hoist shaft as mentioned, with a concrete floor, and a reinforced concrete main floor over top. The extension of the pit in the overhauling department is similar in construction, with the absence of the side shaft tunnel chambers. At that end of the pit, there are also steps to the level of the shop floor. The total length of the pits, hoist and overhauling, is 87 ft. 10 ins., with a depth of 4½ ft. Between the hoist and overhauling sections of the pits, there is an uninterrupted passage under the tracks, where the track supporting wall is cut away, permitting access between pits. On the floor of the pit, and running the full length of each, is a 4 ft. gauge track for a small car, on which the motor and

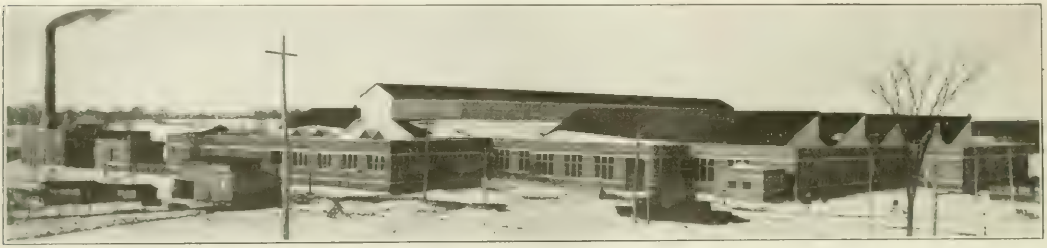


Fig. 1.—Montreal Tramways Co.'s New Plant viewed from the South.

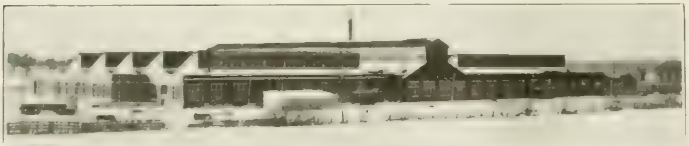


Fig. 2.—Montreal Tramways Co.'s New Plant looking at the North Side.

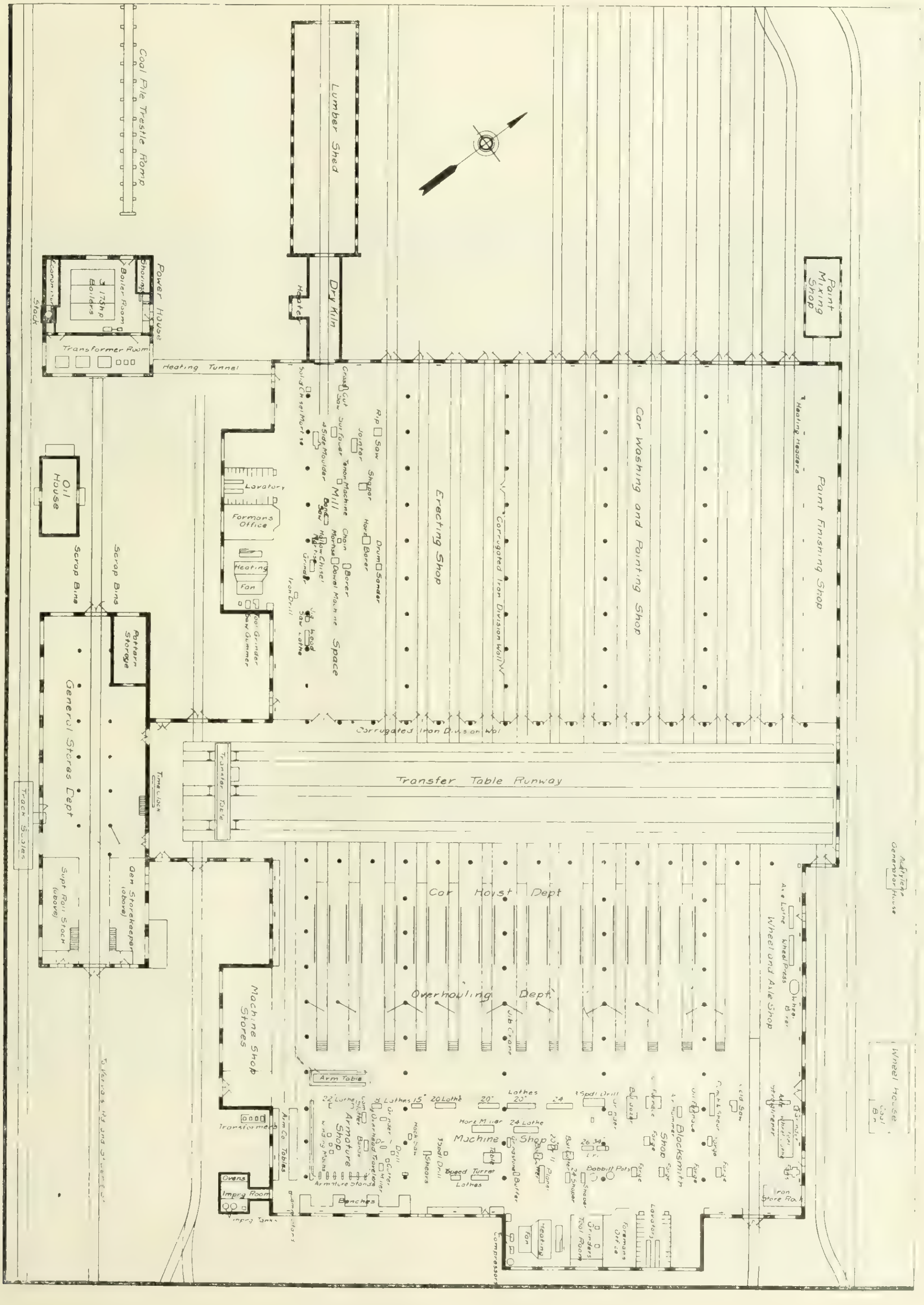


Fig. 3.—Plan of the Montreal Tramways Co.'s New Plant, showing layout of all Shops.

[illegible] there being a jib for each pit. The jibs and overhauling section are shown in the background in figs. 8 and 9. It will be noticed that the trucks as run out from under the cars at the hoists, are spotted over the pits in the overhauling section, shown at the far end of the pit, fig. 6, and there dismantled when required. On [illegible] and equipment as removed may be mounted and kept conveniently together while undergoing repair. The parts that require machine or forge work can be brought across into those sections in front of the overhauling department.

Along the north wall of the shop is located the wheel and axle department. The layout of this is shown in fig. 3, and the arrangement in fig. 7. Ranged along the wall in this department are all the machines, which include a steel wheel [illegible] axle straightener, wheel boring machine, wheel press and an axle lathe. These machines are all on a group drive, with overhead shafting along the wall. In front of the boring machine and axle lathe are air hoists, suspended on an I beam parallel to the line of the [illegible] I beams for the mounting of the work in the [illegible] pit, there is also an air hoist for the carrying [illegible] removed under the air hoist, run out on the transfer table and brought down the shop to this track, adjoining the wheel and axle department. Between the axle straightener and the wheel boring mill, there is a space used for the interior storage of wheels before and after machining, stacked in piles out from the wall as in the background in fig. 7. A stock of wheels for this department is maintained in a small frame building across the outside track from the side entrance.

The blacksmith shop occupies that portion of the shop in the immediate foreground in fig. 8, an area of 71 by 66 ft. The floor of this department is of the usual cinder form, in which it differs from that in the balance of the shop, which has a more solid construction. The original intention was to have a solid concrete floor, but this plan has been modified in the constructed building, the floor consisting of a layer of concrete on a cinder bed, the concrete being superimposed with a 2 in. layer of bitulithic pavement. This covering has the advantage of a longer life, and at the same time its plastic nature leaves it freer from breakage from parts falling on it, with consequent dire results to the falling parts. In the event of anything falling on the bitulithic floor, the resulting hole in the floor can be removed by the rolling over of the plastic material. A springy floor of this kind is also much easier on the operators who must stand on it all day, concrete floors being a fruitful cause of ailments, while the bitulithic, having less heat conductively, never becomes as chilled.

The blacksmith shop is equipped with a liberal supply of machines for the efficient handling of all classes of repair work. This equipment consists of the following: cold saw, punch and shear, 4 by 2 ft. oil furnace, air hammer, 6 ft. square oil furnace, bulldozer, dry grinder, and 6 down draft forges. The forced draft and exhaust fans for these six forges are located along the north wall, driven from the line shafting of the wheel and axle department. The exhaust from the forges is discharged through a pipe that rises to the roof directly over the exhaust fan. The blast and exhaust of the forges passes through pipes bedded in the concrete floor so that the whole blacksmith shop is remarkably free from overhead obstructions. The air hammer used in the department is an upright steam hammer using compressed air as the operating medium instead of steam, the exhaust discharging into the shop over top of the machine.

Something new in the manner of handling the bar iron stock in the blacksmith shop has been introduced here. In the corner of the shop adjoining the blacksmith department, there has been constructed a bar iron rack of sufficient size to handle all the stock required to be carried for the blacksmith department. The ends of the rack are provided with expanded metal doors, of which there are three, these doors being kept normally locked. When the blacksmith requires some stock, the stores department is advised, and the stores attendant comes over to the rack and delivers to the black-

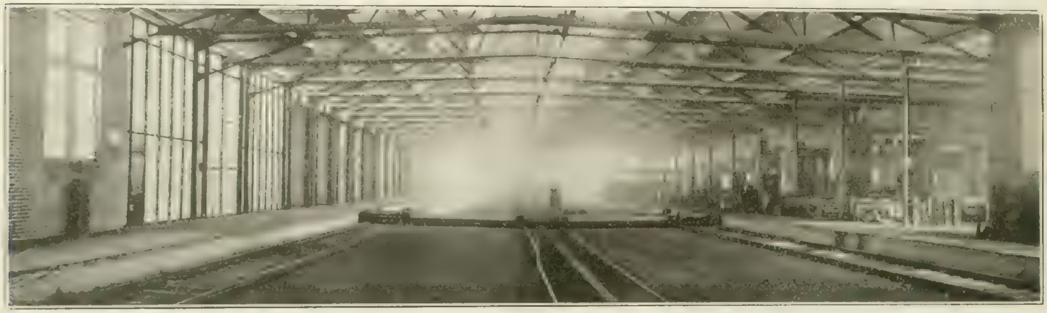


Fig. 4.—Covered in Transfer Table which centrally divides the Shops.

Fig. 5.—Details of One of the Twelve Car Hoists.

smiths the required stock, arranged in the usual manner. The object of this arrangement is to obviate the necessity of a couple of men making several trips back and forth between the blacksmith shop and the stores department to bring over a few bars of stock, the stock being now kept in the place where it is required. It is unloaded directly from the supply car onto the rack just as conveniently as in the stores building.

The machine shop adjoins the blacksmith department to the south, occupying the whole central portion of the east side of the shop, in an area 71 by 100 ft. The machine equipment consists of the following tools: 3 spindle drill, 24 in. lathe, three 20 in. lathes, 15 in. lathe, wet tool grinder, 24 in. lathe, horizontal boring and milling machine, grindstone, power hack saw, 34 in. drill, 26 in. drill, double head bolt cutter, 20 in. drill, single head bolt cutter, 3 spindle drill, shears, 2 babbit melting pots, two 24 in. shapers, planer, buffer, turret lathe, and speed lathe, all arranged as laid down in fig. 3. The drive for these several machines is from overhead shafting, the machines arranged in groups for group drive.

Fig. 6.—Car Hoist supporting Car Body.

Fig. 7.—Arrangement of Wheel and Axle Shop.

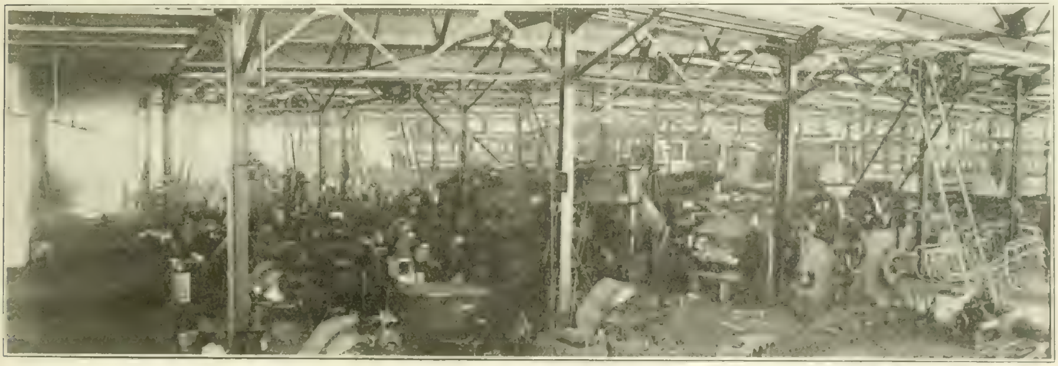


Fig. 8.—Interior View of Main Building, showing Blacksmith Shop, and Overhanging Stage in Background.

The armature department occupies the south easterly section of the shop, and is the portion shown in the immediate foreground in fig. 9. The tool layout in this shop is shown in fig. 3, and includes the following machines: 18 in. lathe, 22 in. lathe, wet tool grinder, commutator slotter, 2 spindle drill, 20 in. drill armature bander, printers' cutter, and universal miller. In addition there are seven of the usual armature stands shown to the right in fig. 9 and two armature tables, one of which is in the immediate foreground, and the others in the left background. Along the west wall are fitters' benches, and along the south wall, on two benches, are mounted the taping machines and other equipment for taping the armature and field coils. The end of one of these latter benches is shown in the left foreground of fig. 9.

Circling the armature department is an overhead I beam trolley, shown in fig. 9, which travels around over the armature tables and stands in the path shown in fig. 3. The armature to be repaired is brought in from the left in the direction indicated, from the track leading from the transfer table, and placed on the first armature table. The armatures from there are picked up as required, and placed on the stands, and when repaired, removed to the second armature stand, ready for removal to the point of entry, and thence to the awaiting trucks by way of the transfer table. The armatures thus make a complete belt line, with a constant forward movement.

Built out from the south east corner of the shop there is a small room containing two impregnating tanks and and oven for the treating of the armature and field coils.

About midway along the east wall, fig. 3 shows a projecting wing, which is divided off into rooms. The southerly room contains the heating equipment for the part of the shop east of the transfer table. This is made a local power room, for along the south wall of this room are located two compressors one of which is 10 x [illegible] [illegible] 37 ins. diameter and 12 ft. high, is located in the room. [illegible] ed water in the air, a cooler has been in[illegible] headers between which the air flows in small piping, the heat radiating, and the water distilling and collecting at the bottom [illegible] cooler is located in the connection between the compresors and the tank on the outer wall of the room. These compressors deliver at a pressure of 80 lbs. For rivetting, 100 lbs. is required, so the shop is provided with a car set for boosting the air from the line pressure of 80 lbs. to 100 lbs.

The room adjoining is the tool room, and in addition to carrying the usual assortment of small tools, etc., contains a tool room grinder and a drill grinder. The entrance is from the shop, and in that wall there is a delivery window for handing out the tools.

The foreman's office is housed in the room adjoining, which it will be noticed is bayed out into the shop, giving a more comprehensive view of the shop interior. Adjoining the foreman's room to the north, is the lavatory, which is a splendid example of shop accommodation. Down the centre, next to the windows, is a double row of washbasins, provided with hot and cold water, and along each wall is a row of urinals, with [illegible] [illegible] taken up by [illegible] closets. The end room contains lockers.

The projecting wing on the south side of the building is for the local stores, and the accommodation of the repaired material. It is a room 69 by 26½ ft., and is known locally as the machine shop store.

The shop is equipped for oxy-acetylene welding, handled at present at the northerly end of the transfer table. A small out building is under construction for this plant, where all the repair work for the plant will be handled. The range of work at present handled is quite extensive, all manner of repairs being made to motor casings and truck frames.

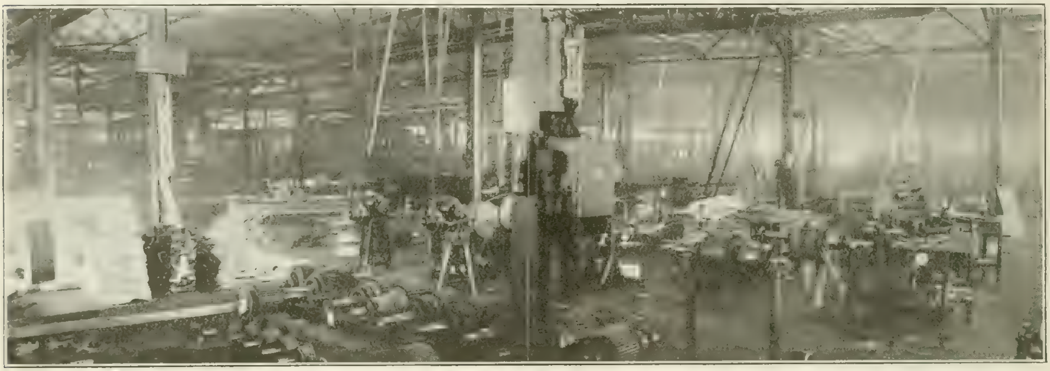


Fig. 9.—Interior View of Main Building, showing Armature Shop, with Machine Shop and Overhauling Space in Background.

The shops are more or less symmetrically arranged around the central transfer table, and in construction the halves are similar in nearly all details. At right angles to the transfer table, there run five bays of equal width, each spanned by a roof truss, the top members of the trusses being extended on the south side so as to form a saw tooth construction with the skylight opening to the north light. This construction is shown in the views, figs. 1 and 2. All these skylight windows have controllable sashes that can be opened in unison from below.

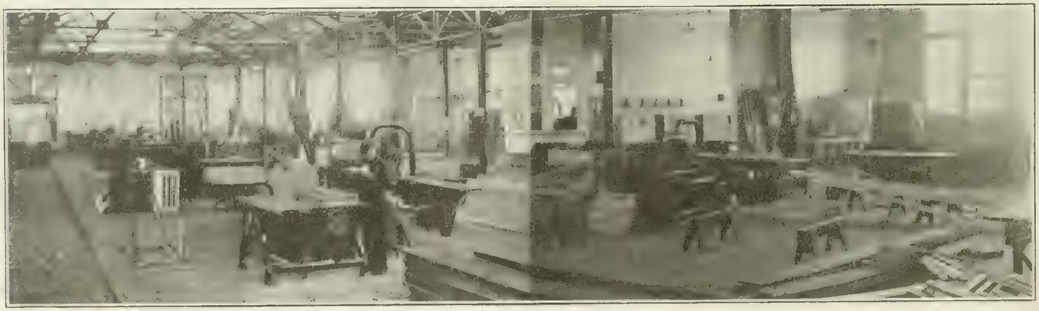


Fig. 10.—Interior View of Mill and Erecting Shop, showing Auxiliary rooms on the Right.

The section of the shop to the west of the transfer table is used entirely for car body work, and on account of the inflammable nature of the material contained, it is divided off from the rest of the shop at the transfer table edge by a corrugated iron wall, as shown on the left in fig. 4. Thirteen tracks are contained in this half of the shop, located directly opposite the corresponding tracks in the machine shop section. In the car section are housed three departments, car washing and painting, erecting shop and mill, the latter two in one section, and the first in a separate section, the two parts being separated by a corrugated iron wall for similar reasons to that stated for the other wall.

The mill space is shown in fig. 10, a view taking in nearly the whole department. This space contains the following machines, as noted in fig. 3: Jig saw, saw gummer, tool grinder, iron drill, single and triple drum sanders, dowel machine, horizontal boring machine, band saw, tenon machine, shaper, jointer, four side moulder, surfacer, rip saw, solid chisel mortise, cross cut saw, pattern makers' lathe, hollow mortise, chain mortise and exhaust blower. The requirements of a mill are such as to necessitate a very clear overhead space if rapid production is much desired. In consequence, this plant has introduced the underground drive, which is becoming so popular in wood working plants. In this underground scheme, practically the whole shop where the machines are located, is chambered out to form a shallow basement, in which are located the motors, shafting and belting, the latter coming up through the floor to the machine. In fig. 10, it will be noted that there is no belting visible, the driving equipment being all located under the floor in the shallow basement, approached by steps from the right.

All the auxiliary equipment for the shop is also housed in this shallow basement, including an exhaust blower. This underground scheme is particularly advantageous for this, as the shaving and saw dust exhaust pipes at the machines, pass down through the floor into this basement, connecting with a central pipe through the basement to the exhaust fan, which delivers the shavings through an inclined pipe to a hopper in the power house.

In the mill space, there are no tracks, but the erecting shop in the same room contains four, each of which has a pit of the same proportions and 66 ft. long, at the transfer table end. One of these is used as a local store for the rod stock used in the erection work.

The car washing and painting shop to the north of these last departments, contains 9 tracks, the southerly three of which contain similar pits to those in the erecting shop, making 7 pits in all in the car department. This department, with an area 176¼ by 150 ft., is the larger portion of the car department, and it is in this department that the major portion of the car overhauling, consisting for the most part of repainting and general brightening up, is performed. The north wall of this section, shown in fig. 11, is the sash and door finishing section, in which all the removable parts of the car body are finished; this includes painting, glazing and varnishing. Shop trucks will be noted in the foreground of fig. 11. These are taken to the car to be dismantled, loaded with the removable parts and taken on the dismantling truck to this department for finishing.

A paint mixing shop, 18 by 38 ft., is located to the west of the north west corner of the shop, and is separated from the main building by a covered in passage way for fire purposes.

The dry kiln and lumber shed are located to the rear of the mill space, in narrow buildings, as shown in fig. 3.

These two buildings communicate with each other and with the mill room by a track through the [illegible] end of the mill space, which is used for the storage [illegible] of lumber ready for the mill. The dry kiln is 52 by 16 ft., and has a projecting side wing on the south side, communicating at both ends by [illegible] tight sliding doors. In this projecting wing, on the [illegible] side, there is a heating unit consisting of a bank of pipe coils with a 4 ft. fan direct connected to a small engine, the steam being received from the power house near by. The lumber shed to the rear is 113 by 30 ft., provided with piling racks on each side for the select woods.

Along the south side of the car department section, there is a projecting wing containing lavatories, office and heating unit, all exactly the same as the arrangement in the machine shop section.

The general stores department is the long building at the southerly end of the transfer table, communicating with the main shop at that point. The east end of the stores building is two stories high at the sides, with the upper stories for offices. On the south side is the office of the Superintendent of Rolling Stock, and on the north, that of the General Storekeeper. To the rear of this point is the stores section, the south side of which is shown in fig. 12. That side consists of a series of 11 cross tiers of store bins, and on the north side, there are lower bins for heavier stores. The north side also has an upper gallery, along which is a tier of store drawers for light parts such as screws and other stores that are required in large quantities. This gallery communicates directly with the General Storekeeper's offices and also has a stair to the floor level. At the west end of the south side, there is a vault structure, 35 by 18 ft. which is used for the storage of patterns. The rooms under the offices are for springs, gears and pinions.

Through the centre of the stores building runs a track, by which the stores can be brought directly into the building, and loaded again directly on the stores car for distribution over the system. This track to the rear leads out through scrap bins that are now under construction. These bins are arranged along both sides of the track and are covered. The bins on the south side have a narrow gauge track along the front for the passage of the scrap into the desired bin and for sorting, and midway in this track is a track scale for weighing the material.

These scrap bins extend to the oil house, a one story and basement structure, 37 by 17 ft., to the west of the stores building. Like the other buildings it is of brick, with a concrete floor. Entrance to the main floor is through sliding doors from platforms on the track sides. The west end of this floor is to be used as [illegible] storage space, arranged with a frame work of iron to carry five double tiers of oil barrels, practically a carload of oil in all. The other end of the room is for a Bowser oil tank installation, the tanks for which will be located in the basement. The basement is entered by an outside stairway on the west side. In it in addition to the tanks, there will be a waste treating plant for impregnating the waste with oil and packing it in barrels for sending to the different divisional points. In the cellar entrance way, there is a hoist for lifting the barrels, with an overhead track running out in front of the building for transporting the barrels out on the stores car.

The power house is located to the west of the oil house, and is a brick structure, 52 by 58 ft., divided into boiler and transformer room by a brick partition. The boiler room contains three 175 h.p. boilers, carrying 100 lbs. of steam. To the rear of the boilers is a fuel economizer, the scraper for which is operated by a 3 by 2½ in. vertical engine. The boiler feed is provided for by a 10 by 6 by 10 in. feed pump, but under normal conditions, it is not required in service, as the city water pressure is 125 lbs.

The transformer room of the power house contains three 50 k.w., and one 30 k.w., transformers. The former receive power from the high tension lines to the shops at 13,200 volts, dropping it to 2,200 volts for transmission to the shops. At the shops, as shown alongside the impregnating room in fig. 1, there are transformers mounted on a bracket on the machine shop stores room wall, receiving power from the power house at 2,200 volts, and dropping it to 220 volts for shop use. The fourth transformer in the power house is for dropping the 2,200 volt power to 110 volts, for the shop lighting system.

To the west of the power house is the coaling plant, consisting of a trestle ramp., open below upon which the coal cars are run and dumped. Between the trestle piles below, it is the intention to lay a narrow gauge track for a short industrial line to carry the coal into the boiler room to replace the present wheelbarrow method. An ash handling plant is under construction at the upper end of the ramp. In front of the boilers, there will be a long worm in a channel, which will carry the ashes out to an elevator at the end of the ramp, raising them to a chute projecting over the car.

HEATING SYSTEM.—Hot air is used for the heating of the main building, with the heating plants located in the south and east sides of the buildings, in projecting wings. Steam for this purpose is brought through tunnels inside the walls from the [illegible] from the [illegible] [illegible] is a 5 by 6 ft. concrete tunnel, with 12 in. walls, and [illegible] reinforced concrete roof, the latter 18 in. below the level of the ground, and designed to carry a loading of 400 lbs. per sq. in. The steam and return pipes are carried on the walls of the tunnel on roller brackets secured to the walls by hooked bolts in the concrete, and located at 8 ft. centres. The tunnel along the walls of the shop through which the pipes pass is similar in design, and is the duct through which the hot air is led through the shop.

The steam from the boiler through the tunnel comes in an 8 in. main, continuing the same size to the first heating apparatus room, following the wall. From that point on along the south and east walls to a point near the second apparatus room the main is reduced to 6 ins., reducing still further to 4 ins. The return from heating the second apparatus is through a 2½ in. pipe, increasing to 3 ins. at the first apparatus room, passing through the tunnel in a 4 in. pipe. At the extreme end of this steam and return piping, i.e., at the second apparatus room, there is a 1¼ h.p. vacuum pump in a pit, for looking after the return of the condensation, sending it back to the boiler room through the return pipe.

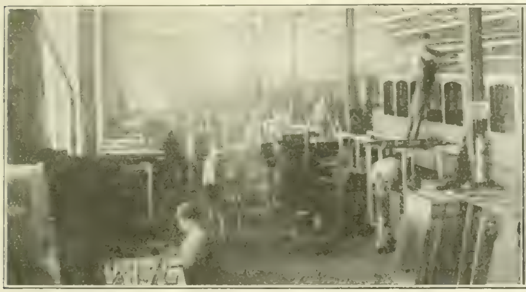


Fig. 11.—Arrangement of Paint Finishing Shop.

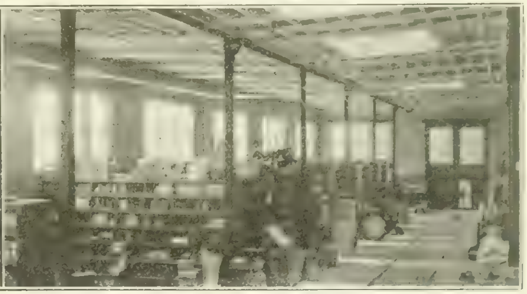


Fig. 12.—Arrangement of South Side of General Stores [illegible]

The heating of the general stores building is by coil radiation, the steam for which is drawn off from the main along the south wall in the wing of the main building at the south end of the transfer table by a 2 in. pipe. The return from this heating system is through a 2 in. pipe leading directly to the first apparatus room through the tunnel. The dry kiln is supplied from the 8 in. main as it emerges from the boiler room tunnel, a 2½ in. pipe leading to the heating set in that building, with a 2 in. return, joining the main return at the tunnel.

In the two heating apparatus rooms is a heating unit, consisting of a 9 by 5½ by 5 ft. box, filled with 1 in. pipe, open on one side to the shop, and on the other into a 12 ft. fan, driven by a 9 by 12 in. engine, by which the heated air is forced through the heating tunnels around the shop.

The second apparatus room heats the whole of the shop east of the transfer table, and the first apparatus room the balance of the shop west of the transfer table. The central location of the second in the east wall, makes the tunnel construction in both directions along the wall under the floor practically similar. The fan delivers the heated air under the floor through a 54 by 60 in. tunnel, a deflector in the centre dividing the flow. The southward flow tunnel from that point is 46 by 42 in., reducing to 24 by 24 in. at the [illegible] of the transfer table, and the northward tunnel is 42 ins. square, reducing to 24 ins. square at the other end of the transfer table. The southward tunnel is slightly larger, as from two points along the south wall tunnel, there are two 15 in. diameter pipes leading across the shop, under the southerly four pits at right angles to them, with outlets 10 ins. in diameter leading out into the sides of the pit, with a damper provided for each.

From the first apparatus room the major portion of the heat passes out to the north through a 54 in. square tunnel, gradually reducing in size along the west and north sides of the shop to 18 ins. square at the north end of the transfer table. The tunnel in the easterly direction from the apparatus room is 28 by 24 ins., reducing to 24 ins. square at the south end of the transfer table. Across the end of the transfer table, the two heating tunnels communicate through a 24 in. square tunnel for the passage of the steam and return mains, but have baffle plates at each end to interrupt the flow of air.

The local heating of the shop from the heating tunnel is by means of heating headers located at intervals along the wall, against which they lie flat. The majority of the headers are standard in size and construction, built of an 8 by 24 in. box of no. 12 iron, united at the corners with 1 by 1 by 1-8 in. angles, and rising to a height of 4 ft. above the floor, and projecting to the tunnel under the floor, the header being supported on the floor by a 2 by 2 by ¼ in. angle. Near the top of the header there is a double deflecting plate, directing the air outward through both sides, through heavy netting, the opening in which is half the depth of the header. From these the air is forced out into the shop. The majority of the headers are of the 8 by 24 in. size, but there are also 8 by 15 and 8 by 18 in. sizes, used along the walls between the windows where the headers are more closely spaced, while the larger sizes are used principally between the large doors. In the offices, smaller headers lead in from the tunnel.

The outlying buildings are all heated by direct radiation from steam coils. The only important system in the lot is that in the general stores building, where the local steam main from the main that passes along the east side of the shop, connects with a system of 1,760 ft. of 1¼ in. pipe, arranged in coils.

THE LIGHTING of the shops has been carefully attended to, with due consideration to the points where the maximum amount of light is required. For this purpose, the tungsten light is peculiarly adapted, having a wide range of sizes of illuminating units. In the section of the shop to the north of the transfer table, the lights are arranged in rows of 10 between the tracks. In the paint and erection shop portion of this end, the lights are all 250 watt, excepting the 9 at the transfer table end, which are all 150 watt. In the mill section the lights are nearly all 150 watt, [illegible] here and there over certain of the machines, these are increased to 250 watt. Over the transfer table is a row of five 100 watt lamps. Between each of the lifting hoists are six 100 watt lights, while down the machine shop section are four rows of 150 watt lamps, interspersed in which are [illegible] 250 watt [illegible]. In the general stores building [illegible] 150 watt [illegible] 100 watt lamps. All [illegible]

FIRE PROTECTION AND WATER SUPPLY.—The fire protection of the main building and general stores building is arranged by a system of thermopiles located under the roof. In the main shop there are two separate circuits, one for east of the transfer table, and the other for west of it, each containing 50 thermopiles, and the general store is on a circuit containing a fewer number of thermopiles. These three circuits connect to three galvanometers in a case on the wall at the west end of the transfer table which is the focal point of the shop, where the time clocks are located, and where the watchman is stationed. Normally, the galvanometer indicator shows a safe sign, but in the event of any abnormal heat, which would strike the roof first, the thermopiles would cause the galvanometer to deflect, the greater the heat, the greater the deflection, as the thermopiles are in series. Deflection beyond a certain point leaves the needle in the operating field of a strong magnet, which draws the needle still further out of its normal position, closing an electric circuit, and ringing an alarm bell.

In a separate case adjoining this thermopile alarm indicator, there is another alarm box for the smaller buildings, with a connection from the boiler room, oil house, lumber kiln, pattern storage and impregnating room. Local heat at any one of these points causes a hinge switch in the alarm box to trip, this action closing another switch, ringing the alarm bell.

At Youville, the city water pressure is in the neighborhood of 125 lbs. In consequence, this is ample for fire protection without further boosting through an auxiliary fire pump. The water supply enters the main building at the northeast corner, through an 8 in. water main to a water meter at that point. From there the main is divided into fire and water service pipes. All pipes are under the floor, with headers at intervals.

The fire service main, 8 in. pipe, divides near the corner, a 6 in. main running south along the second row of columns, and another 6 in. main west along the first row of columns. There is also a 4 in. main that runs back from the meter about 100 ft. from the entry corner of the building. The machine shop has six hydrant connections, three at the outer and central columns in the line of the main, and three in the line of columns centrally with the car hoists. Five of these are from the southerly main, this main also branching out to a hydrant about 100 ft. diagonally from the south east corner of the building, with another branch from a central point to a hydrant outside the centre of that side. This main terminates in two hydrants in the general stores building.

The westerly main from the entry corner contains one of the machine shop hydrants. The arrangement in the westerly half of the building is the same as in the easterly. There are six hydrants in that section with three hydrants outside to the west, at the corners and centrally. On the south there are also two outside hydrants between the general stores building and the main building, and on the north, a single hydrant centrally located on that side, making 23 in all.

Service water is piped all over the buildings in a similar manner, with connections attached to the columns at convenient points. The tiling of the building for sewage purposes is also very complete, the different interior systems all draining to a central westerly 15 in. sewer, to a large gully at the west end of the shops. On the south and west sides of the shops are five smaller gullies for draining the surrounding ground, these all connecting with the central sewer and draining into the west main gully. This passes off through an 18 in. vitrified tile sewer, sloping to the west on a 0.4 per cent. grade, connecting 1,000 ft. to the west with the Montreal St. Denis Street relieving sewer.

CONCLUSION.—This plant is said to have been designed on the same general lines as the Plank Road shops of the Public Service Co., of New Jersey.

The general design and construction were carried out under the direction of D. E. Blair, Superintendent of Rolling Stock, who is in charge of their operation, Remelius acting as consulting engineer. The designs of the buildings were developed by Marchand and Haskell, architects, Montreal, the engineering work being done in the Montreal Tramways Co's. engineering department, under J. D. Evans, Chief Engineer, and R. M. Hannaford, Assistant Chief Engineer.

Toronto Railway Company's Annual Report, Meeting, Etc.

Following are extracts from the report for the year 1912, which was presented at the annual meeting, Feb. 5:—

Gross earnings		$5,448,050.3[illegible]
Operating, maintenance, etc		2,866,550.12
Net earnings ...		$2,581,500.[illegible]
Dividends	$870,595.85	
Bond interest, etc ..	199,992.76	
	$1,070,588.61	
Payments to City:		
Percentage on earnings	$798,958.66	
Pavement charges .	90,953.00	
General taxes	52,137.30	
	$942,048.96	2,012,637.57
		$568,86[illegible]

The increase in gross passenger earnings, compared with the previous year, is $567,035.00; the earnings being $5,367,502.48, against $4,800,467.48 for 1911. Nothwithstanding the large increase in gross earnings the surplus was reduced largely by the operation of additional cars placed in service, a higher rate of wages paid to conductors, motormen and other employes, also the cost of material of all classes having advanced in price. The charges of the year were $2,866,550.12, compared with $2,653,361.86 the previous year. The percentage of operating cost was 53.4% of passenger earnings.

The payments made to the City of Toronto were $942,048.96, which was an increase of $119,815.72, or 14.6% over 1911.

In addition to entirely renewing the battery plant at Frederick and Front Streets, there was expended during the year on capital account, $591,484.70 in building additional rolling stock and procuring electrical equipment for same, the construction of new tracks and erection of overhead work in various sections of the city, additions to buildings, and other improvements.

On March 25 a fire occurred at the King St. East Division, completely destroying the car storage house in rear of the main building, together with about 150 cars, practically all of which were of the open, or summer type. The property was insured.

The company's agreement with its employes expired on June 15. After a number of conferences, all differences were amicably adjusted, an increase in wages was granted, and a new agreement entered into for three years.

The second drawing of the company's currency and sterling bond issues, under the terms of the mortgage deed dated Sept. 1, 1892, took place June 27, the company being obliged under the mortgage deed to redeem by drawing annually 5% of bonds issued, to be redeemed on Aug. 31 following the date of drawing, and from which date no interest is payable. The full number of bonds drawn in June, 1911, amounting to

$168,693.33, have been presented and paid, and of the bonds drawn during 1912 $159,500 have been presented and redeemed. The total of bonds so drawn for redemption is $339,386.66.

Careful attention has been paid to the maintenance of the plant, rolling stock equipment, and other proporties.

Your directors declared out of the accumulated surplus earnings four quarterly dividends of 2% each, all of which have been paid.

The Toronto and York Radial Ry. Co. reports that its earnings continue to show satisfactory increases. The gross earnings were $492,922.86, compared with $449,059.16 for the previous year, an increase of 9.76%.

INCOME ACCOUNT.

Gross earnings		$5,448,050.36
Operating, maintenance, etc.	$2,866,550.12	
Interest on bonds, etc	193,992.76	
Percentage on earnings	798,958.66	
Pavements, taxes	140,090.30	3,999,591.84
Surplus earnings		$1,448,458.52

PROFIT AND LOSS ACCOUNT

Balance from 1911		$3,125,894.33
Surplus earnings, after payment of all expenses, interest, taxes, etc.		1,448,458.52
		$4,574,352.85
Dividends, four of 2 per cent each		$[illegible]
Balance from 1911	$3,125,894.33	
Surplus carried forward	[illegible]	3,604,757.[illegible]
		$4,574,352.85

COMPARATIVE STATEMENT.

	1912	1911
Gross income	$5,448,050.36	$4,851,541.42
Operating, maintenance charges, etc.	2,866,550.12	2,653,361.86
Net earnings	2,581,500.24	2,198,179.56
Passengers carried	135,786,573	12[illegible],997,844
Transfers	56,176,985	48,730,671
Percentage of charges, etc., to passenger earnings	[illegible]	[illegible]

The officers and directors for the current year are: President, Sir Wm. Mackenzie; Vice President, F. Nicholls; other directors, Sir Henry M. Pellatt, Sir Rodolphe Forget, Hon. G. A. Cox, W. D. Matthews and Jas. Gunn.

London Street Railway Company's Report.

Following are extracts from the report for 1912, presented at the annual meeting at London, Ont., Feb. 5:—

	1911	1912
EARNINGS:		
Passengers	$274,887.95	$301,196.62
Miscellaneous	4,718.98	5,034.40
Gross earnings	$279,606.93	$306,231.02
EXPENSES:		
Maintenance:		
Way and structures	$ 22,325.91	$ 23,743.37
Equipment	30,337.48	28,516.55
Transportation:		
Power plant	$ 35,556.80	$ 40,015.09
Car service	74,985.98	86,367.60
General	29,530.59	31,635.58
Total operating expenses	$192,736.76	$210,278.19
Net earnings	$ 86,870.17	$ 95,952.83
DEDUCTIONS:		
Interest on bonds	$ 28,750.00	$ 28,911.00
Interest on overdraft	93.59	
Total deductions	$ 28,843.59	$ 28,911.00
Net income	$ 58,026.58	$ 67,041.83

During the year $29,735.61 was spent on improvements and additions. Negotiations with the city for extensions resulted in an agreement for the straightening of the Wellington St. line north of St. James St. by placing the track upon Richmond St., thus making the route direct and greatly improving the service. The negotiations also provided for the building of a new line on Cheapside from Richmond to William St., and then on William from Cheapside to Oxford St., approximately 6,000 ft.; a new line on Adelaide St. from Oxford St. to Central Ave., which will enable an additional two way belt service to be given in the north end of the city, direct to both the central and east ends and also forming a cross town line in the eastern part. The agreement made last year further provides for double tracking of congested portions on Horton St. between Wellington and Richmond, on the Hamilton Road between Mamalon and Rectory, and on York St. between Ridout St. and the river, all of which is to be credited against mileage requirements by the city. Of the above work the removal of the line from Wellington St. to Richmond was accomplished last year, as well as the construction of the line on Cheapside and William Sts. This latter line opens up a fine large section for residential purposes. Ties were renewed under several large sections of track in different parts of the city during the season, so that the maintenance of the track and roadway has been kept up in good order. Six new cars will be added to equipment during 1913, including modern trucks, motors, etc. After more than three years of negotiations with the Ontario Hydro Electric Power Commission for the use of power from Niagara Falls, it was found impossible to make any arrangement for such power that would be satisfactory, and so it was decided late in the fall to install a 500 kilowatt Corliss compound engine set. This work is now in progress and will be finished in the course of a few weeks. The addition to the shop and stores department was completed during the year, and has greatly facilitated in the work. A large lathe and wheel press were also installed, which enable the company to do its own wheel work.

Late in Dec., 1912, it was decided by the Ontario Railway and Municipal Board that a certain large section of the township east of the city limits should be added to the city. It is claimed the population thus added will undoubtedly make the population over the 50,000 required by statute before cars can be operated on Sunday, and so it may be anticipated that there will soon be a demand for this service, although we do not anticipate much profit, if any, from it.

The expected increases in gross earnings and surplus during the past year have been exceeded, and as general business prospects in the city are unusually good, our anticipations for the coming year are that it will be by far the best year in our history.

Our relations with the public continue very satisfactory, and that no litigation of very satisfactory, and no litigation of any consequence appears against the company.

STATISTICAL STATEMENT.

	1912	1911
Gross earnings	$306,231.02	$279,606.93
Operating expenses	210,278.19	192,736.76
Expenses, % of earnings	68.5	68.9
Net earnings	95,952.83	86,870.17
Net income, % of capital	12.[illegible]	10.51
Passengers carried	8,353,230	7,582,120
Car earnings, per revenue passenger	3.64	3.67
Transfers	1,292,705	1,178,885
Total passengers	9,645,935	8,761,005
Car earnings, per passenger	3.12	3.13
Car mileage	1,470,738	1,44[illegible]
Gross earnings, per car mile	20.40	19.10
Operating expenses, per car mile	14.24	13.37
Net earnings, per car mile	6.50	6.03
Number of miles of track	33.25	33.25
Gross earnings per mile of track	9,209.95	$8,409.23

The company's property consists of 33.25 miles of single track, covering about 26 miles of territory, 20.8 miles in the city, and 5.2 miles outside; a power house capable of generating 1,150 h.p.; storage battery plant of 320 amp. capacity; 2 car houses; car shop and machinery; office building, and the following rolling stock:—Single truck motor cars, 34 closed, 5 open; double truck motor cars, 5 closed, 5 open; single truck trailers, 4 open; sweepers, 2; work car and snow plough, 1; emergency car, 1; line wagon, 1.

The officers and directors for the current year are:—President, H. A. Everett, Cleveland, Ohio; Vice President, T. H. Smallman, London, Ont.; other directors, P. W. D. Broderick, Toronto; H. S. Holt, Montreal; W. M. Spencer, C. H. Ivey, London, Ont.; F. W. Moore, Cleveland, Ohio.

Niagara, St. Catharines and Toronto Railway Construction, Betterments, Etc.

Work on the extension from St. Catharines, Ont., to Niagara-on-the-Lake, is progressing rapidly, rails being laid and the trestles well under way.

The new station in Thorold is rapidly nearing completion and will be opened about March 1. Increased siding facilities have been arranged for in Merritton, Port Dalhousie and Thorold.

The Company also has in contemplation a rearrangement of track used at Niagara Falls, Ont. An effort will be made to construct a line down Bridge St. from the N.St.C. & T. junction to the G.T.R. station, thereby doing away with the use of local line tracks in Niagara Falls by main line cars.

The company has ordered in the United States four convertible double truck 4 motor cars for use on local lines at an expenditure of $30,000, and an increased service will be put into effect on the St. Catharines, Merritton and Thorold local line in the spring.

The company has received a 750 k.w. rotary converter and transformers for the Niagara-on-the-Lake extension, which are being placed in temporary quarters near the car barn on Welland Ave., for the purpose of increasing the power supply in and about St. Catharines.

An order has also been given the Canadian General Electric Co. for two 500 k.w. rotary converters and transformers for a new power station in St. Catharines. When these machines are installed ready for operation the 750 k.w. machine now being erected will be moved to the Niagara-on-the-Lake end of the new extension. The 300 k.w. machine now in operation at the St. Catharines sub station will be moved to the Niagara Falls sub station, increasing the power capacity at that point. The expenditure involved will amount to over $50,000. The power distribution of the system will then be as follows:

St. Catharines	1,000	k.w. capacity.
Thorold	1,000	" "
Niagara Falls, Ont.	600	" "
Welland	500	" "
Niagara-on-the-Lake	750	" "

The New York, New Haven and Hartford Rd.'s electrified zone, extending from Woodlawn to Stamford, Conn., has been in successful operation for several years. The company is now extending the zone as far as New Haven, and it is expected that this section will be open by July 1. The new work will embody such improvements as have been suggested by the experience gained in operating the existing stretch of track. One of these will be a rearrangement which will eliminate the effects of electro magnetic induction on adjacent telegraph and telephone systems, which heretofore caused much trouble and interruptions in service. The overhead line carries a pressure of 11,000 volts.

Dominion Power and Transmission Company's Annual Meeting.

The company's annual meeting was held in Hamilton, Ont., Feb. 17. The following are the only references in the report to the street railway portion of the business:

"The physical condition of the properties is excellent and continues to improve, large sums having been expended to that end, particularly on the power house and the street railway. A third transmission line has been built from Hamilton to the power house on our own right of way. Application has been made to Parliament for an extension of the Brantford and Hamilton charter to enable us to extend that railway to Galt."

In the financial statement the earnings, expenses, etc., of the electric railways, power and lighting departments are lumped together and no separate information is given as to the railways. Particulars of the railway earnings, etc., for the year ended June 30, 1912, were given in our February and March issues under "Electric Railway Statistics."

The company's gross earnings were $2,563,371.38; operating expenses, $1,359,459.34; bond interest and interest, $352,152.75; surplus earnings, $851,759.29. Dividends of $362,301.24 were paid. All deferred dividends on preferred stock have now been paid.

The officers and directors for the current year are:—President, J. R. Moodie; Vice President, Jas. Dixon; Treasurer, J. Knox; Secretary, W. C. Hawkins; directors, Sir John M. Gibson, J. W. Sutherland, Lloyd Harris and W. Southam.

Ottawa Electric Railway Company's Annual Report, Meeting, Etc.

Following are extracts from the report for 1912, as presented at the annual meeting, Feb. 3:—

The gross earnings were $934,397.77, compared with $840,680.52 in 1911; 21,815,798 passengers were carried, compared with 19,270,521 in 1911; the net earnings were $400,059.07, and have been disposed of as follows:—

[illegible]	[illegible]
[illegible]	[illegible]
Mileage payable	[illegible]
Taxes	9,463.16
[illegible] contingent account to be applied to reduc[illegible]	[illegible]
Transferred to credit of profit and loss account	30,998.00
	[illegible]

The balance at credit of profit and loss account is now $138,261.83, and of rest account $200,000.00.

During the year a new 1,000 h.p. substation was installed on Albert St., and land has been purchased to instail two more of the same capacity, one in Lower Town, and the other in the southern part of the city. A large addition to the Cobourg St. car barns was completed and the erection of a steam turbo generator of 4,200 h.p. on [illegible] under way. With these improvements and the delivery of 20 double truck p.a.y.e cars, now under construction by the Ottawa Car Co., our earning capacity and facilities for handling the increasing traffic will be greatly increased. Instead of erecting a new building for office accommodation, as proposed in last year's report, your directors purchased the building, 248 Albert St., which has been occupied by the headquarters and receiving office staffs. The tracks along Sparks St. and the Plaza have been renewed with a 93 lb. rail, and a small portion of the new tracks on Queen St. from Elgin St. to Bank St., authorized by the city, completed. The remainder of the latter work will be finished early in the spring. The new bridge over the canal on Bank St. is now approaching completion, when we will be in a position to carry out the extension of our tracks to Ottawa South.

STATISTICS.

	1912	1911
Gross receipts	$934,397.77	$840,680.52
Total expenses, including mileage payments,, taxes, etc...	578,540.96	545,128.87
Net income	355,856.81	295,551.65
Passengers carried	21,815,798	19,270,521
Percentage of operating expenses to receipts	[illegible]	[illegible]

The past year, from a street railway standpoint, was one of difficulty in Ottawa owing to the typhoid epidemic, the cold and wet summer, and the disturbance of traffic due to new construction on Sparks St., the Plaza, etc. The expectations are that the present year's receipts will exceed $1,000,000, compared with $71,000 in the company's first year of operations in 1891-2.

Only one change was made in the directorate, Jas. D. Fraser, who has been Secretary-Treasurer for many years, being elected to succeed Hon. G. A. Cox, resigned. The board, as now constituted, is:—President, T. Ahearn; Vice President, W. Y. Soper; directors, G. P. Brophy, T. Workman, T. F. Ahearn, E. N. Soper, and J. D. Fraser.

Halifax Electric Tramway Company's Annual Meeting.

The report presented at the adjourned annual meeting in Halifax, N.S., Feb. 12, shows increased gross and net earnings over previous years. The surplus account for 1912 shows a balance of $704,119, the gain for the year being $104,934.

Total passenger receipts were $250,263, electric light and power earnings $228,654, gas and product earnings $61,035, operating expenses $286,560; net bond interest $30,000, net earnings $223,393; dividends paid $112,000, passengers carried 5,688,414, or 476,157 more than in 1911; per cent. operating expenses to income, 54.06; car mileage 984,943. The assets are $2,827,351.

During the year the belt line was double tracked, track extended a mile on Gottingen street, new car house erected, steam turbine installed and other improvements made. A further reduction was made in electric light rates and employes' wages were increased.

Substantial progress has marked the operations for the year, resulting in increased gross and net earnings over previous years.

The construction work outlined in the last report was successfully carried to completion, including the double tracking of the Belt Line, the purchase of four closed cars, the construction of a concrete and brick car house, with accommodation for 16 cars, and the installation of a 2,000 k.w. steam turbine, this latter about doubling the capacity of the electric generating plant. Various other important additions were made to the property, including the extension of the track on Gottingen St. from Cunard St. to Young St., about a mile, the purchase of an additional sweeper, the installation of a new incandescent circuit, additions to car equipment, etc. In addition to the capital expenditure referred to above and distinct from ordinary repairs included in operating expenses, there was expended on renewals and betterments $3,559.22.

A further reduction was made in rates for electric lighting, and the rates of wages to employes were substantially increased, thus continuing the practice followed in the previous year of having the employes and consumers of electric current participate in the general prosperity of the company.

PROFIT AND LOSS ACCOUNT.

Passenger receipts	$250,263.47
Electric light and power gross earnings	217,444.83
Gas department, gross earnings	61,035.34
Miscellaneous earnings (less provision for bad debts, 1912)	11,210.09
	$539,953.73
Operating expenses	$286,560.16
Interest on mortgage bonds	30,000.00
Dividends	112,000.00
Renewals and betterments	3,559.22
Dalhousie College fund	3,000.00
Balance to surplus account	104,834.35
	$539,953.73

Consequent on the change of control, which has passed to Montreal people, an almost entirely new directorate was elected, O. E. Smith, of Halifax, being the only old director re-elected. The new board is as follows:—President, E. A. Robert, Montreal; 1st Vice President, J. W. McConnell, Montreal; 2nd Vice President, O. E. Smith, Halifax; other directors, J. A. Neville, H. H. Smith, W. M. P. Webster, J. E. Wood, Halifax; Sir Frederick Borden, Ottawa; P. J. McIntosh, New York; W. G. Ross and F. H. Wilson, Montreal.

Ontario Hydro Electric Commission's Projected Electric Railway.

A deputation representing the Electrical Power Union, which was formed in Toronto recently, and declared in favor of a system of municipally owned electric railways operated by hydro-electric power, waited on the Dominion Government in Ottawa, Feb. 6. The delegation asked that government aid be voted in aid of a line from Toronto to serve Markham, Uxbridge, Locust Hill, Ashburn and Port Perry, in East York, and Ontario County. Consideration was promised. We are officially advised that the proposition referred to is that of the projected Toronto, Markham, Port Perry and Uxbridge Radial Ry. It is proposed to build a line from Toronto to Markham, passing through Wexford, Ellesmere and Unionville, with a branch from Markham through Green River, Brougham, Greenwood, Brooklyn, Ashburn and Myrtle to Port Perry, and a second from Markham through Ringwood, Stouffville, Altona, Glasgow and Goodwood to Uxbridge. The line, it is proposed, shall be managed by the Ontario Hydro Electric Commission, its powers being extended for this purpose; and that the building of the line shall be financed upon bonds guaranteed proportionately by the different municipalities. The H. E. Commission has already under consideration the extension of its power lines into the district, and it would provide the power lines, sub stations and right of way, securing in return a material and permanent customer. A. F. Wilson, Markham, Ont., is the secretary in connection with the promotion of the line. (Feb., pg. 90.)

The Edmonton (Alta.) Municipal Ry. was operated at a loss of $26,495 during 1912, and W. T. Woodroofe, Superintendent, has made a number of suggestions in regard to changes in operation to increase the revenue during the coming year. Tentative proposals have been made by him to charge a uniform rate of 5 cents, with transfer privileges, do away with the present yellow labor tickets, do away with the dollar blue book of tickets, do away with the transfer privileges, do away with the red and blue tickets and establish the price of children's tickets at 10 for 25 cents.

Electric Railway Projects, Construction, Betterments, Etc.

Battleford - North Battleford, Sask.—A project for the building of an electric railway to connect Battleford and North Battleford, Sask., has been submitted to the people of these two towns. F. P. Alywin, Ottawa, is the representative of the syndicate making the proposal, and the proposition he submitted is on the lines of the contract made between the Moose Jaw Electric Ry. Co. and the City of Moose Jaw, Sask. Mr. Aylwin stated that the capital is ready for the building of the line as soon as an agreement may be entered into.

British Columbia Electric Ry.—Plans have been prepared for the building of a line along 10th Ave. to the site of the University buildings.

It is proposed to build a large car barn and a central station for the distribution of power near Hastings townsite on the Burnaby Lake line.

A site has been acquired on Douglas St. and Pandora Ave., Victoria, on which a 10 story building will be erected. The ground floor will be used as a central station for the company's suburban lines. The new branch line to the Uplands was opened for traffic, Feb. 3, and it is expected that the Saanich Peninsula line will be opened April 1. (Feb., pg. 90.)

Buffalo and Fort Erie Ferry Ry.—The Ontario Legislature is being asked to authorize an increase of capital stock, and a further issue of first mortgage and refunding sinking fund bonds for the purpose of electrifying the railway. Bicknell, Bain, Strathy and Mackelcan, Toronto, are the solicitors. (Feb., 1911, pg. 282.)

Burrard-Westminster Boundary Ry. and Navigation Co.—W. McNeill, Chairman of the Company, is quoted as having stated that 20 miles of this projected railway will be built during the current year. It is proposed to start work on the line between the Stave River Falls and Pitt River in May. The question of the building of a bridge across the Pitt River at Coquitlam was discussed by Mr. McNeill and the Provincial Government, and it is said that an arrangement is about to be submitted to the Legislature providing for its construction. This bridge will form a connection between the Stave River Falls-Pitt River section of the line, and the Vancouver-Pitt River section. It is expected that the entire line will be completed within two years. Steam will be used as the motive power on the Stave River Falls-Pitt River section, until the power plant of the Western Canada Power Co., which owns the charter, has been completed. (Jan., pg. 39.)

Chestermere and Calgary Suburban Ry.—Application is being made to the Alberta Legislature for authority to increase the company's capital stock to $750,000; to increase the bonding powers from $12,000 to $20,000 a mile; and to extend the time within which the lines authorized in 1910, may be built. Ryan and Wright, Calgary, are solicitors for applicants. (Jan., 1912, pg. 38.)

Eastern Ontario Electric Ry.—The Ontario Legislature is considering a bill granting an extension of time for the building of the lines authorized by chap. 134 of the statutes of 1909. The provisional directors named in the original statute are struck out and the following substituted: E. C. Rendell, H. Hastings, C. S. Foss, G. T. Taylor and G. E. Smith. (May, 1909, pg. 367.)

Edmonton Radial Ry.—We are officially advised that the city has decided not to extend the line to St. Albert, Alta., at present. The extension may possibly be built next year, but nothing has been decided.

The Alberta Legislature has passed an act affecting the City of Edmonton, providing, among other things, for an extension of time for the building of the lines owned by the city. (Jan., pg. 39.)

Forest Hill Electric Ry.—The Ontario Legislature is being asked to incorporate a company with this title to build an electric railway from Forest Hill Road, at the northerly limit of Toronto, along Forest Hill Road and Bathurst St., to 2.5 miles north of Eglinton Ave.; from Forest Hill Road along Eglinton Ave.; to one mile west of Dufferin Ave.; and northerly along Dufferin Ave. for 2.5 miles, with branch lines or extensions as may be necessary. Mills, Raney, Lucas and Hales, Toronto, are solicitors for applicants. (May, 1912, pg. 251.)

Guelph Radial Ry.—A number of men, interested in the building of electric railways, were in Guelph, Ont., Feb. 6, looking into a project for the building of a line from Guelph to Puslinch Lake. The charter for the building of this line is held by the G.R. Ry., which is owned by the city. It is said that a desire has been expressed to take over the franchise for this line, and to extend it to Hespeler, where connection would be made with the Galt, Preston and Hespeler St. Ry., which is owned by the C.P.R. One of the party is quoted as stating that if the project goes through a large summer hotel will be built at Puslinch Lake, and other developments made there. (May, 1912, pg. 451.)

Lacombe and Blindman Valley Electric Ry.—Press reports from Lacombe, Alta., state that the right of way for this projected electric railway has been bought. The financing of the company is, it is said, being done by a British syndicate, conditionally upon the people of the locality subscribing a proportionate amount. This amount is reported to have been obtained by means of a public subscription, the company being represented in the canvass by G. R. Strathy, Toronto, one of the directors, and W. Young, the company's engineer. (Feb., pg. 90.)

Manitoba Radial Ry.—Application is being made to the Dominion Parliament to extend the time for the building of the line authorized by chap. 105 of the statutes of 1907. (June, 1911, pg. 555.)

Montreal and Southern Counties Ry.—An alternative proposal for an extension of the company's lines in Montreal, was taken under consideration by the Board of Control, Feb. 7, and was referred to the legal department and a special committee. The line at present terminates on lower McGill St., and the company desires to have an entrance to Youville Square. (Feb., pg. 90.)

Montreal Tramways Co.—E. A. Robert, President, is quoted as stating, Feb. 5, that the suggested building of underground lines is not the solution of the present congested condition in the city. What is required is that the city should consent to such extension of lines as would enable the company to work the existing lines to the maximum of their capacity. Immediate relief could be given if the city would cooperate with the company. An immediate measure of relief is necessary, and an underground system would take some years to build.

H. B. Harris, of Harris & Co., Boston and New York, who are looking after the company's financing, is quoted as stating in Montreal, Jan. 31, that his firm was prepared to advance from $75,000,000 to $100,000,000 to the company for development work to be spread over 30 years, as soon as the plans were arranged. (Dec., 1912, pg. 622.)

Morrisburg and Ottawa Electric Ry.—The shareholders have been called upon to pay four calls of 10% each upon the capital stock subscribed, payable Mar. 3, May 5, July 7 and Sept. 8. R. A. Bishop, Morrisburg, Ont., is Secretary. (Jan., pg. 39.)

Niagara, St. Catharines and Toronto Ry.—The Board of Railway Commissioners has approved revised location of the line in St. Catharines, mileage 0 to 1.8. (Feb., pg. 90.)

Ottawa and St. Lawrence Electric Ry.—The Ontario Legislature is being asked to pass an act amalgamating the North Lanark Ry. Co. with the O. and St. L.E.R. Co., increasing its capital stock from $1,000,000 to $5,000,000, authorizing it to issue bonds for $30,000 a mile, and extending the time for the building of the authorized railways. (Nov., 1912, pg. 574.)

Port Arthur and Fort William Electric Ry.—The Ontario Legislature is being asked to confirm bylaws sanctioning the following expenditure by the City of Port Arthur, Ont., on the portion of the railway within its bounds:—Siding to the fair grounds, $5,600; double track on Arthur St., $11,000; extension on Hill St., $6,500; double track, Bay and Algoma St., $58,500; heavier steel rails on Cumberland St., $55,400; iron poles within certain limits, $1,400; belt line, $82,000; extension to Hedge siding, $34,000; extension to Queen St., $4,300; extension along Algoma St., $6,550.

The Fort William City Council has decided to build a second track on Frederica St., between Edward and Young Streets, and a Y at the end of the Mission extension. (Feb., pg. 90.)

Saskatoon Municipal Ry.—The Mayor of Saskatoon, Sask., in his recent inaugural address, stated it would be necessary to spend about $100,000 upon extensions of the city's electric railway, and in building a second track on certain streets. The engineer is preparing a report as to what is necessary to do. (Feb., pg. 91.)

Toronto and York Radial Ry.—The Ontario Legislature is being asked to pass an act giving the company the right to enter into an agreement with the city of Toronto for the building of a double track line on Yonge St. from the present southerly terminus to York mills; the right an run cars on the Metropolitan Division on Sundays; the right to build a line to connect the Metropolitan Division with the Scarboro Division on the east, and the Mimico Division on the west; power to increase the bond issue from $20,000 to $30,000 a mile of single track, and for an extension of line for the building of previously authorized lines. (Feb., pg. 91.)

The appeal of the City of Toronto against an order of the Ontario Railway and Municipal Board, authorizing the company to build a double track line, on a new route, off Yonge St., has been allowed by the Court of Appeal, and the City Council has taken steps to stop the construction work, which has been about half completed. It is said that the company will carry the matter to a higher court.

The city has been asked to confer with the company with respect to the plans for joining the Scarboro and the Mimico sections of the line with the Metropolitan division.

It is reported that plans are being prepared for the building of a line from Langstaff on the Metropolitan Division easterly [illegible] pg. 91.)

Toronto Eastern Ry.—[illegible] trolley system on this line. The overhead wire will carry 1,200 volts direct current. [illegible] pg. 91.)

The Vancouver Island Hydro-Electric [illegible] under the British Columbia Companies Act. The Provincial Minister of Railways has issued the company's certificate under sec. 16 of the B. C. Railway Act, 1911, approving of the route map of a projected electric railway in Nanaimo.

A bylaw has been favorably voted upon by the electors of Vancouver, granting a franchise, and the details of this are now being finally arranged between the company and the City Council. (Feb., pg. 91.)

Winnipeg Electric Ry.—The City Board of Control has passed a resolution suggesting the building of about 20 miles of extension of lines in the city, not necessarily for immediate construction, but as indicating a general policy in regard to future extensions. It was also decided to apply to the Public Utilities Board for an order for the immediate building of a second track on Arlington St., from William St. [illegible] Ave. from Arlington St. to McGregor St.

The Manitoba Legislature is being asked [illegible] company and the municipality of St. Vital, for [illegible]

Electric Railway Finance, Meetings, Etc.

British Columbia Electric Ry.—Gross earnings for December, $613,654; operating [illegible] $224,574; renewal funds, $51,620; net earnings, $172,954; approximate income from investments, $35,000; net income, $207,954, against $523,003 gross earnings; $319,298 operating expenses; $203,705 net operating earnings; $37,935 renewal funds; $165,770 net earnings; $25,000 approximate income [illegible] December, 1911. Aggregate gross earnings for six months ended December 31, $3,436,466; net earnings, $1,190,415, against [illegible] same period 1911.

Cape Breton Electric Co.—Gross earnings for Dec., $34,387.35; operating expenses and taxes, $16,123.65; net earnings, $18,263.70; interest charges, $4,375; balance, $13,-[illegible] funds, $1,206.66; net income, $12,582.04, against $31,417.93 gross earnings; $15,798.21 operating expenses and taxes; $15,619.72 net earnings; $4,512.50 interest charges; $11,107.22 balance; $1,140 sinking and improvement funds; $9,967.22 net income for Dec., 1911. Aggregate gross earnings for 12 months ended Dec. 31, 1912, $360,176.84; [illegible] gross earnings; $181,763.76 operating expenses and taxes; $155,791.12 net earnings; [illegible] period 1911. The construction charges for [illegible] 609.26; and amounts at credit of sinking and improvement funds, of $128,309.29, of replacement reserve, $1,486, and of reserves and surplus, $307,033.18.

Detroit United Ry.—[illegible] directors for the current year:—F. W. Brooks, J. C. Donnolly, J. C. Hutchins, A. Peck, G. H. Russell, J. M. Wilson, C. M. Swift, Detroit, Mich.; A. J. Ferguson, Montreal; G. W. Moore, Cleveland, Ohio; A. Potter, New York City. The company con[illegible] Windsor and Amherstburg Ry. Co. in Canada, which owns [illegible] St. Ry., [illegible] Ry., and the Windsor and Tecumseh Ry.

Grand Valley Ry.—At a meeting of bondholders of the G. V. Ry. and the Brantford St. Ry. in Toronto, Jan. 30, it was reported [illegible] bonds amounted to [illegible]; beside which $26,000 was due on account of taxes, $50,000 on local improvements in Brantford. The net income of the company after meeting operating expenses is at present $1,000 a month. Three holders of the first mortgage bonds, and three holders of second mortgage bonds, were appointed to act with Receiver Stockdale in administering the property to the best advantage.

Halifax Electric Tramway Co.—E. A. Robert, President, is reported as stating, Feb. 12, that the company will not consider any proposition to sell out to the city at 170 a share, and will resist expropriation. A proposition to sell to the city might be made, but it had not been considered by the directors.

Hamilton St. Ry.—The stock of the H. S. Ry. Co. heretofore amounted to $205,000. Press reports state that an additional $700,000 has recently been sold to provide funds for betterments and extensions, and that it is proposed to put a further $500,000 of stock on the market at an early date, for further improvement .

Gross receipts for 1912, $548,259.10; city percentage, mileage, etc., $51,380.56, against $454,010.52 gross receipts, and $43,840.68 city percentage, mileage, etc., for 1911.

International Ry.—Originals of the refunding and improvement 5% gold mortgage made between the I. Ry. Co. and Bankers' Trust Co., Nov. 1, 1912, have been deposited with the Ontario Railway and Municipal Board and the Secretary of State at Ottawa.

A Boston, Mass., dispatch, Feb. 11, states that N. W. Harris & Co. have arranged to place a $12,000,000 loan to enable the company to carry out plans for the improvement of the service and the betterment of its lines.

Mount McKay and Kakabeka Falls Ry.—At [illegible] annual meeting at Fort William, Ont., W. F. Hogarth, President, stated that the company had had a successful year, and predicted a considerable increase in traffic for the current year. During last season, 2,500 cars of sand and gravel were hauled to the city over the company's lines. The extension of the line to Kakabeka Falls is contemplated. H. James, Fort William, is Secretary.

St. John Ry.—Press reports, Feb. 13, state that A. R. Gould, President, St. John and Quebec Ry., and C. C. Poirce, Boston, Mass., have made an inspection of the St. J. Ry., with a view of acquiring it, in connection with the St. J. and Q. Ry. and the allied electric railway line in Maine.

St. Thomas St. Ry.—The receipts of this municipally owned electric railway for January were $416.11, against $380.03 for Jan., 1912. Passengers carried, 42,000, [illegible] Jan., 1912.

Saskatoon Municipal Ry.—Total receipts [illegible] month -wages $6,900, stores $750, interest on capital expenditure $2,083, sinking fund $743, current used $3,910, total $14,386. The 10 cars covered 38,808 miles, an average of 1,437 miles a day. During the month two cars were chartered, producing $14.50. No schedule of rates for chartering cars has been fixed, but the following rates are awaiting approval,—for one continuous trip before midnight, $5, and $2.50 for the return trip; after midnight, $7.50, and $2.50 for the return trip.

Toronto Ry., Toronto and York Radial Ry., and allied companies.—Gross earnings for December, $845,297; expenses, maintenance, etc., $369,821; net earnings, $475,476, against $727,130 gross earnings; [illegible] expenses, maintenance, etc.; $167,355 net earnings for Dec., 1911. Aggregate gross earnings for 12 months ended Dec. 31, 1912, $8,562,600; net earnings, $4,426,980, against $7,615,918 aggregate gross earnings; $3,791,368 net earnings for same period 1911.

Winnipeg Electric Ry.—Gross earnings for December, $361,700; operating expenses, $196,220; net earnings, $165,480, against $319,900 gross earnings; $169,121 operating expenses; $150,779 net earnings for Dec., 1911. Aggregate gross earnings for 12 months ended Dec. 31, 1912, $3,765,384; net earnings, $1,701,236, against $3,829,749 aggregate gross earnings; $1,928,782 net earnings for same period 1911.

Berlin and Waterloo Street Railway Report.

The Berlin and Waterloo St. Ry., which is municipally owned, operates 3.20 miles of line in and between Berlin and Waterloo, Ont. Following is the financial statement for the year ended Nov. 30, 1912:—

EARNINGS.

Cash fares	$19,544 75		
Tickets	20,630 50		
Parcels .. .	335 70		
		$40,510 95	
Berlin & Bridgeport Street Ry ..		[illegible]	
Galt, Preston & Hespeler Street Ry....		1,800 00	
Mail contracts		1,389 12	
Advertising . .		758 53	
			$46,008 60

EXPENSES.

Power purchased......		$ [illegible] 70		
Supplies		1,041 32		
Wages ...		[illegible]		
Snow cleaning		638 15		
Crossing expenses		[illegible]		
Heating car barns .		[illegible]		
Coal		107 47		
			$19,7[illegible]	
Building repairs		$ [illegible] 83		
Car and motor repairs		2,871 70		
Car painting		[illegible]		
Storage battery repairs		621 67		
Track and line repairs		[illegible]		
Tools ..		[illegible] 43		
			$ 6,742 [illegible]	
Debenture interest		$ [illegible]		
Debenture discount ...		[illegible] 00		
Advertising	$73 [illegible]			
Donation .	[illegible] 00			
Printing	426 84			
Sundries ...	[illegible] 41			
Legal .	[illegible]			
Uniforms	[illegible]			
		$ 1,507 80		
Insurance		[illegible]		
Interest .. .		407 31		
Other expenses ..		[illegible]		
Rents		[illegible] 79		
Salaries		[illegible]		
Less Berlin [illegible]				
Less Waterloo [illegible]			[illegible]	
Depreciation			[illegible]	$4[illegible]
Balance				$ 910 58

The balance at credit Nov. 30, 1911, was $2,823.33, which added to the 1912 balance of $910.58 makes $3,733.91, from which is deductable $705.83 due the town of Waterloo, leaving a net balance of $3,026.08. The total assets are given as $148,080.73, and the liabilities as $145,052.65, the latter including a bank overdraft of $669.73.

During the year passengers were carried as follows:—Tickets, 560,370; cash fares, 398,380; transfers, 24,000; total, 982,750.

Electric Railway Notes.

The Mount McKay and Kakabeka Falls Ry. intends adding another steam shovel to its sand and gravel plant, to double its present output.

The Reid Newfoundland Co., St. John's, Nfld., has ordered a double equipment of Westinghouse No. 323 A. motors and 200 D 2 type control.

The London St. Ry. is in the market for six single truck, single ended, pay-as-you-enter cars, without bulkheads, but with enclosed vestibules.

R. J. Fleming, General Manager, Toronto Ry., is reported to have stated that the company will add 75 cars to its rolling stock during the current year.

The Montreal Tramways Co. has ordered 50 car bodies, in addition to the 50 mentioned in our last issue, and 100 pairs of trucks, from the Canadian Car and Foundry Co.

The Dominion Power and Transmission Co., according to press reports, has declined to quote a price to the Hamilton City Council for a sale of the Hamilton Street Railway.

The Calgary City Council has under consideration tenders for four side dump cars, 6 yards capacity, and one 42 in. double end wheel turning lathe, to bore two steel wheels at a time on axles.

The Windsor, Essex and Lake Shore Rapid Ry. has ordered 2 steel frame single sheath box cars, and 4 steel underframe flat cars, each of 40 tons capacity, from the Canadian Car and Foundry Co.

The Port Arthur City Council is asking the Ontario Legislature to confirm bylaws authorizing the purchase of three cars and two trailers for the Port Arthur and Fort William Electric Ry. within that city.

The Berlin and Waterloo Street Ry. has received 2 single ended pay-as-you-enter cars, mounted on 27 G.E. 1 trucks with Westinghouse 101B2 quadruple equipment, single end control, bodies finished in cherry, longitudinal seats upholstered in rattan, from the Preston Car and Coach Co.

The car bodies for the electric railway in Brandon, Man., are being built in the United States and the motors in Canada. Engineer Greenway reports that 10 car bodies will be delivered early in March and that the motors will be fitted in Winnipeg or Brandon. The cars are expected to be ready in April.

The question of heating the street cars is being much discussed in Calgary, Alta. It is the intention to adopt electric heaters as the permanent method, but at present there is not sufficient power available. Pending the provision of the power, the cars have been fitted with storm windows and oil heaters are being installed.

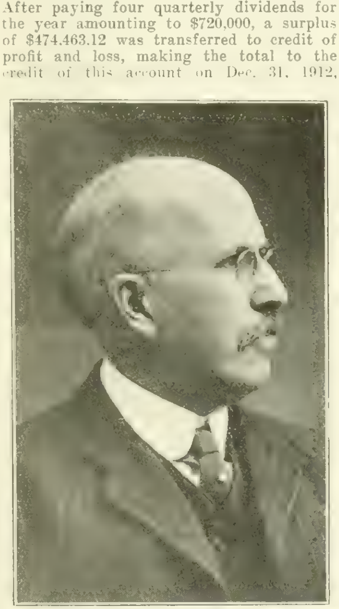
The ratepayers of the former town of North Toronto, which has been taken into Toronto, have passed a resolution calling upon the Board of Control to consider the claims of that portion of the city for a Sunday car service. The Metropolitan Ry., owned by the Toronto and York Radial Ry., at present operating there, has no power to operate on Sundays.

The Regina Municipal Ry. has received 8 double truck, single ended, pay-as-you-enter cars, mounted on 27 G.E.1 trucks, 4½ ft. wheel base, 4 of the cars being equipped with Westinghouse 101B.2 motors, and 4 with G. E. 80 single end controllers, from the Preston Car and Coach Co. The bodies are finished in cherry, both outside and inside, natural finish, cross seats upholstered in rattan, P.C. & C. Co.'s sand boxes, Consolidated Car Heating Co.'s buzzer system and automatic ventilators.

The Dominion Traction and Lighting Co has been incorporated under the Dominion Companies Act with a capital of $12,500,000 and office at Toronto, for the purpose of producing and distributing natural and artificial gas, electricity, hydraulic, pneumatic or other power, for any and all purposes. The general powers are very wide, and include permission to promote the incorporation of, or the acquiring of any company, or an interest in any company using power. The provisional directors are:—W. A. J. Case, J. B. Taylor, C. J. Lynch, H. E. Wallace, L. W. Ward, Toronto.

Winnipeg Electric Railway Company's Annual Meeting.

The report for the year 1912 presented at the annual meeting in Winnipeg, Feb. 12, showed that the gross earnings were $3,765,384.06, against $3,829,749.67 in 1911. After paying four quarterly dividends for the year amounting to $720,000, a surplus of $474,463.12 was transferred to credit of profit and loss, making the total to the credit of this account on Dec. 31, 1912, $2,091,236.37. The railway receipts for the year were $2,114,974.



J. D. Fraser,
Director and Secretary-Treasurer, Ottawa Electric Railway.

The board for the current year is constituted as follows, all the old directors having been re-elected:—President, Sir Wm. Mackenzie; Vice President, Sir Wm. Whyte; Secretary-Treasurer, F. Morton Morse; other directors, Sir Donald Mann, Sir Wm. C. Van Horne, A. M. Nanton, D. B. Hanna, Hugh Sutherland, R. J. Mackenzie.

Electric Railway Signalling in Indiana.—The Indianapolis & Cincinnati Traction Co., Indianapolis, Ind., has completed and put in operation the Simmen signal system on the remaining 22 mile section of its Greensburg division. This makes a total of 40 miles protected in this manner. The work just completed included, in addition to the cab signals, open switch protection and safeguards for east and west bound train movements. Work will be started at once on the Connersville Division which will add 55 miles more of Simmen signal protection to this road.

Personal Paragraphs.

JAS. ANDERSON, General Manager Sandwich, Windsor and Amherstburg Ry., who is in Europe, is expected to return in April.

G. T. HOLDING, formerly of Toledo, Ohio, has been appointed Secretary-Treasurer, London St. Ry., London, Ont., vice J. W. Williams, resigned.

E. A. GRAHAM is reported to have been appointed Electrical Engineer, Winnipeg Electric Ry., vice C. R. Ross, resigned, to go into private business.

R. M. HANNAFORD, acting Chief Engineer, Montreal Tramways Co., read a paper on electric railway track construction before the Canadian Railway Club in Montreal recently.

W. WAINWRIGHT, Vice President, G.T.R. and G.T. Pacific Ry., Montreal, has also been elected President, Montreal and Southern Counties Ry., vice E. H. Fitzhugh, resigned.

T. W. WILSON, formerly General Manager, International Railway Company, Buffalo, N.Y., has been elected Vice President and General Manager, Wilmington and Philadelphia Traction Co., Wilmington, Del.

F. L. HUBBARD, heretofore secretary to the General Manager, Toronto Ry., has been appointed Assistant to the General Manager. L. Smith, heretofore assistant secretary, has been appointed secretary to the General Manager.

JOHN PATTERSON, promoter of the projected Hamilton, Waterloo and Guelph Ry., whose death was announced in our last issue, left his widow an estate valued at $465,621, consisting chiefly of Dominion Power and Transmission Co.'s stock.

DUNCAN McDONALD, ex-General Manager, Montreal Tramways Co., is preparing a report on the street transportation question in Montreal, with a view to suggest temporary remedies for alleged congestion and for permanent improvements. This appears to be the outcome of the persistent attacks which a Montreal paper has been making on the Tramway Co.'s management for months past. The directors entered suits for libel recently and now the paper is paying the expenses of the investigation and report which Mr. McDonald is to make.

JAMES DEWAR FRASER, who has recently been elected a director of the Ottawa Electric Ry. to succeed the Hon. G. A. Cox, resigned, is a son of the late Andrew Fraser of Martintown, Glengarry. He spent his boyhood days in Glengarry, going to Ottawa in 1871, and entering the employ of W. McClymont & Co., lumber manufacturers, as accountant and telegraph operator, where he remained till 1882. He was then appointed Secretary-Treasurer of The Ottawa City Passenger Ry. Co., the old horse road, and occupied this position until 1891, when the company was merged with The Ottawa Electric St. Ry. Co, forming The Ottawa Electric Ry. Co. He has been Secretary-Treasurer of the last named company ever since. He is also a director and Secretary-Treasurer of the Ottawa Car Co., Ltd., Vice President and Secretary-Treasurer of The Wallace Realty Co., Ltd., and a member of the Canadian Street Railway Association's executive committee.

Hamilton Street Ry.—The committee of the Hamilton, Ont., city council dealing with street railway extensions in the city was informed by the company in a letter, Dec. 16, as to the conditions under which, and the time within which such extensions would be built. The city asks for extensions amounting to 50% of the present mileage. The matter is being considered.

Marine Department.

The Dominion Marine Association's Annual Meeting.

The Association's annual meeting was held in Ottawa, Feb. 6, the President, James Playfair, of Midland, Ont., in the chair. The executive committee's report showed that the total tonnage enrolled steadily increases, although the barge or sailing tonnage is becoming less, and although the figures quoted do not show the actual increase in tonnage owned by members, because vessels bought or built and placed in commission during the past season have not all been included in the tonnage statements upon which assessments were paid. The tonnage actually enrolled is .155.523 net registered tons of steam and 35.607 tons of barge or sailing vessels, making a total of 191.130 net registered tons. Adding [illegible] vessels which will be in commission in 1913 the total should approximate 200.000 net registered tons. The report dealt in full detail with the past year's work, including the following subjects:—Chicago drainage canal, pilotage, St. Lawrence River Commission and power development schemes, the Grain Commission, Lake Shippers' Clearance Association, coasting laws, reciprocal arrangements regarding inspection of [illegible] and U. S. steam vessels, immigration officers, radiotelegraphy, U. S. bill regarding seamen, conference of steamboat inspectors, rules of the road, ships articles, examinations for masters and mates, lower grade certificates for masters of tow barges, carrying passengers on tugs and wrecking steamboats, wage schedule and shipping offices, importation of bituminous coal, screening in bond, legislation at last session of Dominion Parliament, extension of period of navigation, a Canadian Lloyd's, statistics regarding water borne freight, statistics regarding interprovincial trade, wreck reports, the canals, including continuous operation, early opening, bridge tenders, ignorance of English language on part of canal employes, safety device for lock gates, protecting lock entrances, handling lines at canal entrances, widening of Lachine Canal between Cote St. Paul and bridge above lock, Lachine Canal upper entrance, [illegible] for Cedar Rapids Manufacturing and Power Co., Murray Canal available draught in 1912, Welland Canal, G.T.R. Air Line bridge, channel at lower entrance Canadian lock at Sault Ste. Marie; Montreal Harbor, traffic regulations, elevator storage charges, extra charges for Sunday work, additional elevator capacity, jurisdiction of Commission; Livingstone channel, Detroit River, channel east of Fighting Island, Detroit River, north channel Georgian Bay to St. Mary's River, Niagara River, Kingston Harbor, [illegible]

During the consideration of the report [illegible] was taken on a number of the [illegible] as follows:

CHICAGO DRAINAGE CANAL.—Resolved, that the Association ask the Minister of Marine and Fisheries for action by way of protest against the continued withdrawal of an excessive amount of water by the Sanitary District of Chicago in contravention of the recent decision of the Secretary of War, and that continued efforts should be made by the Dominion Government [illegible] authorities in protecting the waters of the [illegible] authority other than that derived from the legislature of one state in the Union.

PILOTAGE.—Resolved, that a committee of the Association attend the sessions of the Pilotage Commission and present the standing complaints against the present system, asking also for amendment of the law to provide the identical treatment for vessels from Ontario that is provided by statute for vessels trading with the other provinces; the committee to consist of the Montreal members of the Association and Messrs. Playfair, Norcross, Mathews and King.

GRAIN COMMISSION.—Resolved, that an interview be sought with the Grain Commission, while the members of that body are in Ottawa, and that the whole question of loading and dispatch be discussed, the Chairman of the Commission having intimated a desire to hear the Association's views in verbal discussion.

In this connection, Mr. W. W. Jones, of Port Arthur, addressed the meeting and presented a written argument in favor of the appointment of a single vessel agent at Fort William and Port Arthur. This document was referred to the Association's grain section, and Mr. Jones was asked to join the deputation to the Grain Commission.

LAKE SHIPPERS' CLEARANCE ASsociation.—The continued failure of the Clearance Association to furnish any financial statement or particulars of its business was reported, and it was resolved to insist on the presentation of the full information to which vessel owners are entitled. It was resolved also that the following committee should attend a conference to arrange a new agreement and schedule of rates, namely:—Messrs. Henderson, Playfair, Norcross, Richardson, Murphy, McLelland and King; and that the committee should endeavor to eliminate free storage, to make dispatch of vessels the basis of settlement, and to obtain [illegible] based upon actual cost.

COASTING LAWS.—Resolved, that a deputation of those members able to remain in Ottawa should interview the Minister of Customs on the following day and discuss with him the regulations necessary to enforce strict compliance with the exact terms of the limited privileges granted United States vessels on Nov. 29, 1912.

SEAMEN'S UNION BILL IN UNITED States.—Resolved, on a report of the action taken by British interests through the British Embassy at Washington, to ask that a protest on behalf of Canadian vessels be presented in like manner, with special reference to the section of the bill rendering foreign vessels in a U. S. port subject to the laws of that country to enable a seaman to collect on demand half his wages earned up to that time.

RULES OF THE ROAD.—Resolved, to press for amendment to bring the rules on the Lakes and Upper St. Lawrence into strict conformity with the American Pilot Rules in force on these waters.

SHIPS ARTICLES.—J. A. O'Donahoe, Richelieu and Ontario Navigation Co., presented the [illegible] referred to in the report, and after some discussion it was referred to the executive committee and Messrs. O'Donahoe and Gildersleeve.

LOWER GRADE CERTIFICATES FOR Masters of Tow Barges, Carrying Passengers on Tugs and Wrecking Steamers.—Resolved to continue to press for amendment of the law in both these matters and to accept the amendment regarding passengers suggested in the annual report as a reasonable one in accord with the Merchant Shipping Act.

WAGE SCHEDULE.—W. L. Reed, T. Marks & Co., submitted the report of the special committee appointed to consider this question, recommending what the committee considered a fair schedule of wages, and it was adopted, on the understanding that the wages set out were minimum rates, and might be increased in any instance if members so desired. The report was ordered printed and circulated among members.

STATISTICS.—In this connection J. L. Payne, Comptroller of Railway and Canal Statistics, addressed the meeting asking the co-operation of members in his work.

LIVINGSTONE CHANNEL. — Resolved, that the the Association's counsel, F. King, attend the session of the International Joint Commission in Detroit on Feb. 17, to represent the Association and present the views already expressed to him by members who have consulted their captains; and also that members endeavor to send navigators to give evidence in support of these opinions.

CANALS.—Resolved, that members able to remain in Ottawa on Feb. 7 wait upon the Minister of Railways and Canals and urge that the canals be opened at the earliest possible date this year on account of the various reasons rendering that desirable.

On the recommendation of S. V. McLeod, of the Algoma Central Steamship Line, instructions were given to ask for the continued dredging required on the Canadian side of the channel below the Canadian lock at Sault Ste. Marie; and also to ask for action to return to its old channel the current deflected by accumulations of material dumped on the U. S. side by the contractors working on the new Davis lock.

THE COMMITTEE ON AIDS TO NAVIgation was reappointed, the members being S. C. Calvin, J. Donnelly, W. H. Featherstonhaugh, R. Fraser, J. B. Foote, H. H. Gildersleeve, D. Noonan, C. J. Smith and A. A. Wright.

ELECTION OF OFFICERS.—The meeting then proceeded to the election of the executive committee for 1913, and on the report that L. Henderson, H. W. Richardson, W. J. Wasley and A. A. Wright were the four retiring members, of whom Messrs. Henderson and Wright had been appointed only in 1912 to fill two vacancies caused respectively by death and resignation, it was resolved to reappoint Messrs. Henderson and Richardson and to appoint H. H. Gildersleeve and G. E. Fair, these four to hold office until 1916. J. E. McLurg, having resigned office in the Algoma Central Steamship Line, and having been succeeded by S. V. McLeod, the meeting appointed Mr. McLeod a member of the executive committee in Mr. McLurg's place to hold office for the unexpired period of the term, namely, until 1914.

The executive committee elected the folowing officers for 1913: J. Henderson, President; A. J. [illegible] Vice-President, and H. W. Richardson, 2nd Vice-President.

Deputation to Marine and Fisheries Committee.

The various representatives of steamship companies attending the Association's meeting appeared before the House of Commons Committee on Marine and Fisheries to discuss the bill respecting radiotelegraphy now before the House. The Minister of Marine and Fisheries, Hon. J. D. Hazen, explained that it was proposed to amend section 1 of the bill to read as follows:—

"1. From and after July 1st, 1913, a passenger steamer, whether registered in Canada or not,

"(a) Licensed to carry 50 or more persons, including passengers and crew, and plying between ports or places more than two hundred nautical miles apart, or

"(b) Licensed to carry 250 or more persons, including passengers and crew, and plying between ports or places more than 90 nautical miles apart, or

"(c) Licensed to carry 500 or more persons, including passengers and crew, and plying between ports or places more than 20 nautical miles apart

"shall leave or attempt to leave any Canadian port unless such steamer is equipped with an efficient radiotelegraph apparatus, in good working order, capable of transmitting and receiving messages over a distance of at least 100 nautical miles by night and by day, in charge of a person fully qualified to take charge of and operate such apparatus.

"2. The owner, master or other person in charge of any passenger steamer which leaves or attempts to leave any Canadian port contrary to the provisions of this section, shall, on summary conviction, be liable to a fine not exceeding $1,000 and costs, and such fine and costs shall constitute a lien upon such passenger steamer.

"3. This section shall not apply to passenger steamers while plying on the rivers of Canada, including the River St. Lawrence as far seaward as a line drawn from Father Point to Point Orient, or on the lakes of Canada other than Lakes Ontario, Erie, Huron (including the Georgian Bay), and Superior."

The Minister having explained the bill, F. King, the Association's Counsel, said that the bill as originally introduced, which exempted passenger steamboats plying between ports not more than 200 miles apart, was satisfactory, but the proposed changes would impose a great burden on the Niagara River line and the Toronto-Hamilton Line, where were really ferries. C. J. Smith, General Manager, Richelieu and Ontario Navigation Co., supported Mr King's contention and urged that the lines between Toronto and Niagara and Toronto and Hamilton should be exempted. H. H. Gildersleeve, Manager, Northern Navigation Co., asked exemption for vessels on Georgian Bay. J. H. Lauer, Manager Canadian Marconi Wireless Telegraph Co., explained the terms on which that company equips vessels with wireless apparatus and operates the same. After a short discussion the committee decided to amend the suggested amendments to the bill so as to exempt from its operation vessels running on the Bay of Quinte, between Toronto and Hamilton and on Georgian Bay and the north channel thereof.

Dinner at the Ottawa Golf Club.

In the evening the representatives attending the meetings, accompanied by a number of guests, went by special cars on the Hull Electric Ry., to the Ottawa Golf Club, where they enjoyed a most excellent dinner. J. Playfair, the Association's retiring President, occupied the chair. The [illegible] Hon. [illegible] Minister of Railways and Canals, [illegible] will be made this year on the construction of the new Welland Canal, [illegible] depth at the gates will be 30 ft. though the whole canal will not be dredged to that depth at first. The Sault Ste. Marie Canal is 24½ ft. deep; Hon. J. D. Hazen, Minister of Marine and Fisheries, who dealt with a large number of matters affecting his department and who announced in connection with the deepening of the Quebec-Montreal channel to 35 ft., that should it be found necessary to do so, compensating works would be constructed to prevent any lowering of water in Montreal Harbor and further up stream; and the Hon. S. Hughes, Minister of Militia. Among the other speakers were H. W. Richardson, Kingston, Ont.; A. A. Wright, Toronto; F. King, the Association's Counsel; F. Cook, ex-mayor of Ottawa; G. A. Tomlinson, Duluth, Minn.; W. E. Campbell, Detroit River Steamers; C. A. Magrath, International Waterways Commissioner; F. F. Pardee, M.P.; W. P. Anderson, Chief Engineer Marine and Fisheries Department; G. J. Desbarats, Deputy Minister Naval Service; J. B. Hunter, Deputy Minister Public Works; F. C. T. O'Hara, Deputy Minister Trade and Commerce; J. A. Currie, M.P., and Acton Burrows, Managing Director, Canadian Railway and Marine World.

The Farrar Transportation Company, Limited.

Following are extracts from the report for the year 1912 of this company, which has its headquarters at Collingwood, Ont., and operates the steamships Collingwood and Meaford on the upper lakes.

A dividend of 10% has been paid for the year, and a bonus of 5% from the amount received in settlement of claim against the Craig Steamship Co., Cleveland, Ohio.

The bonded indebtedness on the s.s. Collingwood has been reduced from $108,000 to $94,000, $14,000 having been paid on the principal maturing in 1912 and $5,050 interest on bond issue. These two items aggregating $19,050, were provided for out of earnings and equal approximately 7¾% on the capital stock.

The net profits for 1912 show an increase of 112% over 1911 and an increase of 147% over 1910.

The assets over liabilities have reached $140,067.40, which makes the intrinsic value of the stock $156 a share.

The s.s. Meaford went into commission May 1 and was kept steadily engaged until Dec. 3, when she went into winter quarters at Collingwood, after concluding the most successful season in her history. She carried 25,000 tons of iron ore, 3,000 tons of coal, 12,000 tons of pig iron and 1,800,000 bushels of grain, netting slightly over 20% on her cost.

The s.s. Collingwood started running May 1, and she concluded her banner year and went into winter quarters at Port Colborne, Dec. 12. She carried 145,000 tons of iron ore, 12,000 tons of coal, 2,200,000 bushels of grain, netting approximately 20% on her cost.

ASSETS.

Two steamships [illegible]	[illegible]
Office furniture	[illegible]
Royal Bank	[illegible]
	[illegible]

LIABILITIES.

[illegible]	[illegible]
Prindiville and Co.	4,945.67
[illegible]	[illegible]
Assets over liabilities	[illegible]
	[illegible]

[illegible]

The [illegible] for the [illegible] year are: President, T. I. Thomson, Owen Sound, Ont.; Vice President, E. R. Wayland, Fort William, Ont.; Secretary-Treasurer, G. E. Fair, Collingwood, Ont.; other directors, E. Stubbs, Sault Ste. Marie; D. D. Lewis, Lorain, Ohio; W. E. Allen, Toronto; W. T. Toner, G. R. Pearsall, Collingwood; M. Snetsinger, Thornbury, Ont.; J. Shultis, Port Colborne, Ont.

Launching of the Reid Newfoundland Company's Steamship Lintrose.

The passenger and freight steamship Lintrose, which is being built at Newcastle-on-Tyne, Eng., for the Reid Newfoundland Co., to run between Port aux Basques, Nfld., and North Sydney, N.S., was launched Jan. 21 by Miss Lois Reid, daughter of W. D. Reid, President of the R.N. Co., who was also present with his wife.

The Lintrose is 255 ft. long by 37 ft. beam. She is finely modelled, and is exceptionally strongly constructed for running through ice, which she will frequently encounter on her service. She will be fitted with single screw triple expansion engines supplied with steam by three large boilers, and the machinery is expected to propel her at a speed of 15½ knots an hour. She will be fitted with electric light, steam heating and wireless telegraph apparatus, and she is to have accommodation for over 80 first class passengers, including three special rooms for one passenger each and a ladies' room holding ten. There will be a smoking room on the promenade deck, and a dining saloon and ladies' room on the shelter deck, all amidships. In the after part there will be accommodation for 150 second class passengers. Both the promenade deck and the shelter deck will form spacious promenades for passengers.

Prince Edward Island Car Ferry.

The Minister of Railways and Canals stated in the House of Commons recently that an order in council had been passed awarding a contract to Sir W. G. Armstrong Whitworth & Co., Newcastle-on-Tyne, Eng., for the construction of a car ferry to run between New Brunswick and Prince Edward Island, the same to have 7,000 indicated horse power.

Four tenders were received as follows:—Sir W. G. Armstrong Whitworth & Co., Newcastle-on-Tyne, Eng., £138,000; Canadian Vickers, Ltd., London, Eng., two tenders, no. 1, £112,480; no. 2, £110,700; Swan, Hunter & Wigham Richardson, Wallsend-on-Tyne, Eng., £140,000.

It is expected the vessel will be completed and the service commenced some time during 1914. Plans, specifications and estimates for the necessary piers are being prepared.

In reference to the horse power above mentioned, we are officially advised as follows:—"This car ferry, being designed for use under the worst possible ice conditions to be met with in the Straits, is provided with the above mentioned high power to cope with these conditions. Under less trying conditions and in open water much less power is required. To meet these varying conditions the power is derived from three sets of engines, furnished with steam from six boilers."

Richelieu and Ontario Navigation Company's Annual Meeting

[illegible]

The C.P.R. Austrian Steamship Service

[illegible]

Atlantic and Pacific Ocean Marine.

The C.P.R. s.s. Montford, while bound from London, Eng., to St. John, N.B., damaged one of her propellers during heavy seas, and had to complete the balance of her voyage, from Cape Race, with one screw.

The Dominion-White Star Line's s.s. Laurentic, having been utilized for an additional cruise to the West Indies, her place on the Halifax-Liverpool route, scheduled for Mar. 30, will be taken by the s.s. Arabic for one round trip.

It is reported that berthing accommodation has been arranged alongside shed 16 at the Victoria Pier, Montreal, for the forthcoming season, for the Compagnie Generale Transatlantique, for its service between French ports and Montreal.

The Austro-Americana Line, which has arranged sailings from Trieste, Austria, to Canada, for the forthcoming immigration season, is reported to have acquired the Italian s.s. Bologna, and to have chartered the s.s. Arabiana from Furness, Withy and Co. for the season. The first sailing from Trieste is scheduled for Mar. 15. Jas. Thom has been appointed agent at Montreal.

The Uranium Steamship Co.'s s.s. Uranium was recently libelled by the British s.s. Rappahannock, and the Canadian s.s. Bridgewater, for $50,000 and $30,000, respectively, for services in floating her off the rocks at Chebucto Head, N.S.; the Admiralty Court, however, fixed the amount of salvage in favor of the s.s. Rappahannock, at $40,000, and on a bond being furnished for this amount, the Uranium was allowed to leave for New York.

Capt. Roberts, of the Canadian Northern Steamships' s.s. Royal Edward, has been appointed Dock Superintendent at Avonmouth, Eng., and Chief Officer Wootton of the same vessel has been promoted to the command. Capt. F. Thompson, heretofore Marine Superintendent for the company at Montreal and Halifax, who took command of the s.s. Royal George, on the suspension of Capt. Harrison, by the Dominion Wreck Commissioner, has been confirmed in that appointment.

A report from New York recently stated that the C.P.R. had been awarded the contract by the Dominion Government for a steamship service between Canada and the West Indies, and that it would receive a subsidy of $400,000 a year. No official announcement as to the awarding of the contract had been made up to the time of going to press, and G. M. Bosworth, Vice President, C.P.R., is reported to have stated that the statement was incorrect, and that the C.P.R. had not even tendered for the service.

Details of the trip around the world by the two new C.P.R. Empress trans-Pacific steamships, the Empress of Russia and the Empress of Asia, have been completed. The Empress of Russia, which will be ready first, will take the Mediterranean route, while the Empress of Asia, will go round the Cape of Good Hope, making calls at some of the principal South African ports. The Empress of Russia will leave Liverpool April 1, calling at Gibraltar, Villefranche, Port Said, Colombo, Singapore, Hong Kong, Shanghai, Nagasaki, Kobe and Yokohama, and thence to Vancouver, arriving at the latter port June 7.

Maritime Provinces and Newfoundland.

A passenger steamboat is under construction at Chatham, N.B., for Cape Breton owners, and which it is intended to have ready for operation by May. The dimensions will be, length 60 ft., beam 14 ft.

The s.s. St. Pierre Miquelon, owned by the Societe Anonyme la Morue Francaise, Paris, France, and which was formerly operated in the mail service between St. Pierre, Miquelon, Nova Scotia and Newfoundland, has been sold for £13,000.

The Nova Scotia Registrar of Joint Stock Companies has revoked the certificates of registration issued to the Steamship City of Ghent Co., and the Halifax and West India Steamship Co., at their request, under part 2 of the Foreign Companies Act.

The Reid Newfoundland Co. has under extensive repair at its dry dock and repair plant at St. John's, Nfld., the steamships Wilhelmina, Cynthiana, Nevada and Adventure. When these repairs are completed, the company's other vessels will be overhauled in preparation for the summer's business.

The dry dock at St. John, N.B., which was originally planned to be 900 ft. long, will probably be extended to 1,150 ft. Norton Griffiths and Co., the contractors, have submitted a rough draft of such an extension to the St. John City Council, and asked for a guarantee of $65,000 a year for 35 years, for a sinking fund for the bond issue, and offer 25% of the common stock of the company and to establish a shipbuilding plant in return.

A press report states that the C.P.R. is considering the question of putting a new steamship, which is to be built in Scotland, on the route between St. John, N.B., and Digby, N.S., in connection with the improvement of the Dominion Atlantic Ry. service. It is stated that the new vessel will run in conjunction with the s.s. Prince Rupert, the latter taking the morning service, while the new vessel will take the place of the s.s. Yarmouth, on the afternoon run. We are officially advised that it is not the intention to build a vessel for this service, but to acquire one ready for immediate operation.

The Department of Marine has erected a new lighthouse on Grindstone Island, in the Chignecto Channel of the Bay of Fundy. It is a hexagonal tower with six buttresses, of reinforced concrete, 59 ft. from base to top of ventilator on lantern. The tower is white, and the lantern, which is octagonal, is red. The light is occulting white of the fourth dioptric order, visible 12 seconds and eclipsed 3 seconds, alternately, burning petroleum vapor under incandescent mantle, and can be seen 15 miles from all points of approach by water. It will be put in operation on the reopening of navigation, when the temporary light will be discontinued.

Province of Quebec Marine.

A. F. Dion, heretofore Freight Agent, Canadian Northern Ry., Montreal, has been appointed Traffic Manager, Quebec Harbor Commission.

In a recent action by the C.P.R. against the Quebec Harbor Commission for $2,478, which the C.P.R. claims was paid by it in excess of the amount due to the Commission as rental and other dues, judgment was given against the Commission.

The Marine Department has announced that the lighthouse on the south end of Ash Island, Richelieu River, has been rebuilt. It is a steel skeleton frame, 45 ft. from base to top of lantern, with fixed white catoptric light at an elevation of 44 ft.

The Dominion Department of Public Works is reported to have ordered six steel scows, to be built at G. T. Davie and Sons' plant at Levis. The steel screw hopper dredge which is under construction there for the Marine Department is nearing completion.

The Quebec Harbor Commission has awarded the contract for the dredging of the St. Charles River, from the east end of the breakwater extension to the west end of the north embankment of the Princess Louise dock, to the Dominion Dredging Co. The work will extend to 45 ft. below low water.

Plans for development work in the Quebec harbor are in the hands of the Dominion Government for approval. The work proposed covers improvements in connection with the Princess Louise dock, the building of a bulkhead pier, grain elevator, etc., and a general development from Lampson's Cove to Point a Pizeau. The Commission has acquired Indian Cove for $109,000, and it is the intention to use it for the building of the crib work, etc., for the general improvements, and later it may possibly be used as a site for a ship yard.

Ontario and the Great Lakes.

The name of the steamboat Charles Lemcke, no. 126058, registered at Owen Sound, has been changed by order in council to Henry Pedwell.

The Pere Marquette car ferry International, running between Port Huron and Sarnia, broke a propeller while forcing through the ice, Feb. 11.

It is announced that the Rainy River steamboat service will be resumed about June 1, two boats plying weekly between Kenora and Rainy River. The service was not operated last year, owing to low water and lack of proper dredging.

J. B. Fairgrieve, who died recently at Hamilton, aged 80, was connected with marine life for many years, and at one time controlled a number of grain carrying vessels on the Great Lakes. He retired from active connection with transportation about five years ago.

It is reported that the C.P.R. has arranged for a further addition of 2,650,000 bush. capacity to its elevator D at Fort William, which will bring the total capacity of this elevator up to 7,500,000 bush. The capacity was increased, during 1912, from 2,850,000 to 4,850,000 bush.

The Dominion Transportation Co.'s steamboat Manitou took fire at her winter berth at Owen Sound, Feb. 1, and sank. She was built at Goderich in 1903, and was screw driven with engine of 42 n.h.p. Her dimensions were, length 137.2 ft., breadth 24.2 ft., depth 9.1 ft.; tonnage, 470 gross, 297 register.

The steamboat Victoria, owned by the Pembroke Navigation Co., which has been wound up recently, has been sold to W. L. Hunter, Pembroke, Ont. She is a paddle wheel vessel with engine of 60 n.h.p., and was built at Pembroke in 1897. Her dimensions are,—length 128.7 ft., breadth 21 ft., depth $5\frac{1}{2}$ ft.

The Town of Midland is applying to the Ontario Legislature for confirmation of bylaw passed by the taxpayers to grant a bonus of $25,000 to the Midland Dry Dock Co. for the construction of a floating dry dock and building berth there. Some details of this proposed construction were given in our last issue.

The Pelee and Lake Erie Navigation Co. is having a freight and passenger steamboat built at Collingwood. The dimensions will be as follows:—Length, 145 ft.; beam, 24 ft.; moulded depth, $18\frac{1}{4}$ ft. She will be equipped with triple expansion, jet condensing engines, supplied with steam from a Scotch boiler. It is anticipated that she will be completed by July 15.

It is reported that work on the construction of the projected dry dock at Sault Ste. Marie, Ont., will be commenced Apr. 30, and that it must be completed by Oct. 1, 1914. It is stated that the financing of the enterprise has been completed in England, and that Pethick Bros., Plymouth, Eng., have undertaken the work, the cost [illegible]

The U. S. Circuit Court at Cincinnati, Ohio, has decided that the Great Lakes Towing Co. has had a monopoly of the towing business at the 14 principal ports on the Great Lakes for the past 13 years, and that it is driving out of business the formerly numerous independent tug companies, and, having violated the anti-trust laws, must be dissolved.

During 1912, the Government elevator at Port Colborne handled 12,100,000 bush. of grain, this being the largest quantity handled by any elevator on the lakes, except the G.T.R. elevator at Tiffin, which dealt with 13,680,000 bush. The capacity of the Port Colborne elevator is 750,000 bush., and it has decided to increase it to 2,000,000 bush.

The U.S. Lake Survey reports the levels of the Great Lakes in feet above tide water, for January, as follows:—Superior 601.84; Michigan and Huron 580.08; Erie 572.27; Ontario 246.[illegible]. As compared with the average January levels for the past ten years, Superior was 0.24 ft. below; Michigan and Huron, 0.06 ft. above; Erie, 0.58 ft. above; and Ontario, 1.08 ft. above. It was anticipated that Superior would fall 0.2 ft., Michigan and Huron remain stationary, Erie fall 0.1 ft., and Ontario rise 0.1 ft., during February.

The storage capacity of grain elevators at Fort William is 24,000,000 bush., and with 57 vessels in the harbor, capable of storing another 12,000,000 bush., the available storage capacity at present is 36,000,000 bush. From information supplied, there is approximately 19,000,000 bush., now stored in the elevators and vessels, leaving available storage for a further 17,000,000 bush. We are advised that with the continuing movement of grain to the seaboard by rail, it is unlikely that any grain blockade will occur at Fort William before the reopening of navigation.

The Great Waterways Union, which was inaugurated last year, with the object of keeping the claims of the St. Lawrence-Welland canal route before the Government, held its annual meeting at Berlin, Ont., Feb. 14. A resolution was adopted that in view of the early completion of the Erie [illegible] Panama canal [illegible]ing time of great importance, the Dominion Government be urged to make larger appropriations to secure the earliest possible completion of the improved Welland canal, and to appoint a commission to report on the improvement of the St. Lawrence River to a depth of not less than 30 ft. for the passage of ocean vessels by the St. Lawrence and through canals to the head of the lakes, and the development of waterways from Lake Superior to the western provinces, and asking that no money for construction be spent on the French River, or proposed Georgian Bay canal, until the route can be shown to be commercially practicable.

The Upper Ontario Steamboat Co. at its annual meeting at Liskeard, Feb. 9, decided that the line will not be operated during the forthcoming season, and that all the assets are to be sold immediately, and the company wound up. The report states that the 1912 season might have been one that showed a profit had it not been for a series of serious accidents, which culminated in the sinking of the vessel S. & Y. just below Flat Rapids, in November. The result was that the revenue just about paid expenses. The advent of the Timiskaming and Northern Ontario Ry. in the Elk Lake and Montreal River territory, where the company operated, is taken to mean that navigation on the river would result in a loss to the company were it to operate for another season. The vessels are Adrelexia, Agnes, Gypsy, Geisha, S. & Y., and St. Antoine. The officers and directors who were re-elected for the current year are: President, W. J. Blair; Vice President, C. H. Fullerton; Secretary-Treasurer, F. Hardman; other directors, F. S. Brickenden and T. McCamus.

The commissioner who was appointed to enquire into the causes of the wreck of the steamboat Mayflower, near Barrys Bay, Nov. 12, 1912, when one of the owners and 8 others lost their lives, reports gross negligence on the part of the owners, Hudson Bros., Combermere, and infringement of the Canada Shipping Act. The cause of the wreck was the parting of the seams due to heavy strain from the machinery. The timbers were sound, but alterations had weakened her. The vessel was sailed for a whole season without a certificate, and in face of repeated warnings by the Inspector of Hulls at Kingston, who had refused a certificate because there was no qualified captain aboard. The commissioner considers that the Inspector should have seized and detained the vessel, but the latter holds that that was the duty of the Customs Department, but states that the department had not been informed of the violation of the law. The remaining owner was censured for sailing without a lifeboat, which had been damaged the day before the accident and left behind, as with the lifeboat, all on board might have been saved. The crew was found to be competent, and the commissioner recommends that the Department of Marine should appoint a special official to see that no vessel not complying with the regulations shall ply Canadian waters.

Manitoba, Saskatchewan and Alberta.

The Department of Marine has established 20 spar buoys at various points on the Winnipeg River, between White Dog Island and Kenora.

British Columbia and Pacific Coast Marine.

The North Vancouver Ferry Co. is about to invite tenders for a fourth ferry steamboat, for its service between Vancouver and North Vancouver.

The Union Steamship Co. has come to an arrangement with the underwriters in connection with its wrecked steamship Vadso, by which it receives part of the insurance money, and takes over the damaged vessel.

The Union Steamship Co.'s s.s. Cheslakee, which sank at Van Anda, Texada Island, ary, and has been taken to Esquimalt for overhauling and repairs. The sinking of the vessel caused the death of seven persons.

During January, the inward and outward bound traffic of Victoria consisted of, foreign, 295 vessels, 352,908 tons; coastwise, 484 vessels, 366,359 tons, both showing considerable increases over the figures for the same period in 1911.

The West Vancouver Ferry Board had under discussion recently, the purchase of another ferry steamboat. A report was read on the vessel Falcon, which had been inspected and recommended for the service, but no decision was arrived at.

Capt. B. L. Johnson, who has been appointed the G.T. Pacific Coast Steamship Co.'s pilot at Vancouver, was formerly master of the company's s.s. Prince Rupert. He was recently presented with a silver service by Prince Rupert citizens.

An order in council has been passed establishing a permanent harbor headline beyond which, breakwaters, wharves, piers and other structures shall not in future be built at Prince Rupert, B.C., plan and description of which have been deposited with the Department of Public Works, Ottawa, and with the District Engineer of the Department, at Prince Rupert.

The Inland Transportation Co. has commenced a steamship service between Bellingham, Wash., and Victoria, with the s.s. San Juan II., making three trips a week. The vessel is 65 ft. long, with 14 ft. beam, equipped with engine of 100 h.p., and with a speed of about 15 knots, with accommodation for 80 passengers. Should the venture prove successful, it is the intention to put larger and additional vessels on the service.

The Department of Marine has replied to the memorial of the Vancouver Ship-Masters' Association respecting aids to navigation on the coast, that consideration would be given to the request for a modern fog signal at the outer lighthouse in Porlier Pass, Strait of Georgia, and that there was good reason to hope that a lighthouse would be placed in Brown Passage, in the near future, probably on Triple Island.

The Fraser River Ferry and Navigation Co., Ltd., has been incorporated under the B.C. Companies Act, with $100,000 capital and office at New Westminster, to acquire a license to operate a ferry on the Fraser River between New Westminster, Annacis Island, Port Mann and Coquitlam, which was granted by the B. C. Government to C. F. Macaulay, and in connection therewith to own and operate steam and other vessels, and carry on a general ferry and navigation business.

Capt. Jas. Gaudin, agent, Department of Marine, Victoria, and who frequently conducted enquiries into marine casualties, on behalf of the department, died there recently, aged 75, after a long illness. He was born in the Channel Islands, and was for several years in Hudson's Bay Co.'s service.

An estimate furnished to the Provincial Government for the establishment of direct communication between Vancouver and the Delta country, includes, approaches, waiting rooms, etc., at Ladner and Woodwards Landing, $19,700; ferry boat, 70 ft. long, 28 ft. beam, 4 ft. draught, capable of carrying a deck load of 70 tons, and 50 passengers, $19,000; total cost between banks, $38,700, and work on widening dyke from Ladner to proposed ferry approach, $1,200. If the proposed service is decided on, work will probably be started early in April.

Cost of Concrete at Panama.—The cost per cubic yard of concrete on the Panama Canal during the past fiscal year, varies from $4.77 at the Miraflores Locks, to $7.75 at the Gatun Locks, a total of 1,443,570 cu. yds. having been laid in that period. The labor cost per yard varied from 84 cents to $1.54. The big difference in cost of the concrete lies in the greater accessibility to the stores on the Pacific side, the stone and sand being only a third as costly there as on the other side. 83,760 cu. ft. of concrete piling at Gatun cost $1.57 a foot.

Canadian Notices to Mariners.

Notice 331, Dec. 26, 1912, announcing change in color of front range light of outer range at Port Burwell, Lake Erie, has been cancelled.

Notice 11, published in our last issue, has been cancelled, and the following numbers, then given, 12 to 16, have been changed to 11 to 15.

The Department of Marine has issued the following:—

16. Jan. 23. British Columbia, Fraser River, New Westminster, railway swing bridge, regulations governing opening and closing of swing span.

17. Jan. 25. British Columbia, Strait of Georgia, Discovery Passage, Cape Mudge, fog alarm established.

18. Jan. 25. British Columbia, Arthur Passage, Herbert Reef, light to be established on beacon.

19. Jan. 25. British Columbia, Chatham Sound, Holland Island, new lighthouse, change in character of light.

20. Jan. 27. Nova Scotia, Bay of Fundy, Blackrock, light improved.

21. Jan. 27. Nova Scotia, south coast. East Ironbound Island, light improved.

22. Jan. 27. Nova Scotia, south coast, Jeddore Rock, hand fog horn at light station.

23. Jan. 27. New Brunswick, Miramichi River, Grant Beach back range light, character of illuminating apparatus.

24. Jan. 29. Quebec, River St. Lawrence, Cap de la Madeleine upper range, new front lighthouse.

25. Jan. 29. Quebec, Richelieu River, Ash Island, lighthouse rebuilt.

26. Feb. 3. Quebec, Ottawa River, north shore, Way Shoal Traverse, range lights established.

27. Feb. 3. Ontario, Lake Huron, Saugeen River, change in color of range lights

28. Feb. 8. New Brunswick, Bay of Fundy, Machias Seal Island, characteristic of light, correction.

29. Feb. 8. Nova Scotia, Cape Breton Island, south coast, Louisburg harbor entrance, wreck marked by buoy.

30. Feb. 8. Prince Edward Island, north coast, Rustico harbor, channels to be marked by bushes.

31. Feb. 11. New Brunswick, south coast, Bay of Fundy, off Chance Harbor, bell buoy established.

32. Feb. 11. Nova Scotia, south coast, Cuckold Rock, buoy established.

33. Feb. 11. Nova Scotia, south coast, approach to Halifax, inner gas and whistling buoy, erratum in List of Lights.

34. Quebec, River St. Lawrence, ship channel between Quebec and Montreal, Citrouville Point, lighthouse pier encased in concrete.

35. Feb. 14. British Columbia, Burrard Inlet, Vancouver harbor, Parthia Shoal, dredging in progress, temporary light.

36. Feb. 14, Alaska, Stephens Passage, Grave Point, light established, Stockade Point, light discontinued.

Early Opening of Canals.

A deputation from the Dominion Marine Association, which waited on the Minister of Railway and Canals, in Ottawa, Feb. 7, was told by him that he had issued instructions for all the St. Lawrence and the Great Lakes canals to open on April 15, or the earliest possible date thereafter. He is fully aware of the various reasons rendering an early opening desirable and has undertaken to see that repairs and other work shall not cause any undue delay.

Changes in Richelieu and Ontario Navigation Company's Service.

Announcement is made that, commencing with the opening of the 1913 tourist season, it has been decided to discontinue the service by the R. & O.N. Co. of the U.S., to and from Youngstown, N.Y., and Charlotte, N.Y., will be the western terminus hereafter.

The steamboats Toronto and Kingston will discontinue calling at Charlotte, N.Y., and will run direct from Toronto to Kingston, thence to Thousand Island ports and Prescott, connecting there with the company's Rapids vessels for Montreal and Quebec. Westbound vessels will follow the same route, running direct to Toronto after leaving Kingston. The vessels will leave Toronto at 6 p.m., instead of 2.30, thus affording passengers arriving at Toronto by afternoon trains and vessels, an opportunity of making connection with the vessels for Montreal. Westbound vessels will leave Kingston at 6.30 p.m. and reach Toronto early the following morning.

The Allan Line Steamships Alsatian and Calgarian.

The two steamships Alsatian and Calgarian, which are under construction at two points on the Clyde, Scotland, will, it is announced, be launched, the first about Mar. 8, and the second during April. These vessels are being built with cruiser sterns, somewhat similar to those now being completed for the C.P.R. Pacific service. They will be equipped with quadruple screw, triple expansion arrangement of turbines, of a larger type, and capable of a higher speed than the C.P.R. vessels.

The fittings and furnishings of each vessel will be of a distinctive type throughout, those of the Alsatian being of the Jacobean period, and those of the Calgarian of the Georgian period. The dimensions of the vessels will be, length 600 ft., breadth 72 ft., moulded depth 54 ft.; gross tonnage, 18,500 tons; speed, 19 knots an hour. Passenger accommodation will be arranged for 220 first class, 500 second class and 1,000 third class, and quarters for a crew of 470. Lifeboat accommodation is to be provided for all on board.

Muskoka Lakes Navigation and Hotel Co.—Some brief particulars in regard to this company's annual meeting, which was held in Toronto, Jan. 8, were given in Canadian Railway and Marine World for February. The company does not make its annual report public, but it is stated that last year's operations resulted in a profit of about $20,000. As before stated, the company paid a 5 per cent. dividend for 1912, which is the first that has been paid for a number of years, but it is believed that the books show a credit to profit and loss of about $250,000. The capital stock is said to be slightly under $200,000.

Large Dipper Dredges.—The excavation of the Atlantic entrance to the Panama Canal called into service dipper dredges of unusual size and capacity. The Mindi and Chagres, which are cutting the entrance channel to a minimum depth of 42 ft. at mean tide, are working entirely in rock which has been previously broken up, and they bring the material to the surface in 5-yard dippers. The dipper handles are 62 ft. in length, and the boom supporting the shipper shaft is 50 ft. long. To facilitate the work the dredges have been equipped with steam dipper trips which have shown good results during six months of work.

Collision of s.s. Dufferin and Schooner Lavengro.

Judgment has recently been delivered by Commander H. St. G. Lindsay, Dominion Wreck Commissioner, and assented to by Capts. N. Hall and J. W. Harrison, as nautical assessors, respecting the collision of the s.s. Dufferin, owned in Sherbrooke, N.S., and the schooner Lavengro, owned in Shelburne, N.S., which occurred in Halifax harbor, N.S., June 6, 1912.

The court found that the master of the s.s. Dufferin, W. J. Murdoch, acted to the best of his judgment in trying to avoid the collision, for if he had attempted to stop, or go astern, a more serious accident would have occurred, therefore he is exonerated from all blame. The court is also of opinion that no blame for the accident can be attached to the master or crew of the schooner, who could not do anything to avoid the accident during the short time elapsing between the sighting of the steamship and the collision.

Investigation of the St. Lawrence Pilotage System.

The following is the report of a committee of the Privy Council, which was approved by the Governor-General, Jan. 23:—On a memorandum from the Minister of Marine and Fisheries, submitting that he has had under consideration the pilotage system of the River St. Lawrence with a view to taking measures for its improvement. The recent strandings of the steamships Royal George, Bellona and Gladstone in the river below Quebec have been the subject of very thorough investigations by the Wreck Commissioner. The finding of the court in each of these cases has censured the pilots who were in charge of the respective ships. Public opinion has been greatly aroused as the result of these strandings, following in rapid succession. Criticism of the pilotage system, more especially of that obtaining in the pilotage district of Quebec, has been frequent of late. The Shipping Federation of Canada recently presented to the Minister a memorial suggesting that the time was opportune for a systematic enquiry into the question of pilotage and recommending the appointment of a Royal Commission for that purpose. The Minister is of opinion that the present state of the pilotage system in the pilotage districts of Montreal and Quebec and its administration should be investigated at the earliest possible date, and he, therefore, recommends that he be authorized to appoint, under part II. of the Inquiries Act, chapter 104, Revised Statutes of Canada, three commissioners, one of whom shall be an officer of the Department of Marine and Fisheries, to enquire into and report upon the law respecting pilotage and its administration in the pilotage districts of Montreal and Quebec, and what changes, if any, are desirable therein. The Minister recommends that an honorarium of $20 a day, while actually engaged in the investigation, be paid, in addition to reasonable living and travelling expenses, to each of the commissioners except the departmental officer, and that the said officer be allowed $10 a day for living expenses, in addition to the reasonable travelling expenses, while absent from Ottawa on such investigation, but no honorarium.

Under the authority above given, the Minister appointed as commissioners, Commander H. St. G. Lindsay, Dominion Wreck Commissioner, chairman; Thos. Robb, Manager and Secretary, Shipping Federation; and A. Lachance, Chairman of the Corporation of Pilots of Quebec.

Collision of Ferry Steamboats Dartmouth and Chebucto at Halifax.

[illegible]

Collision of Ferry Steamboat Halifax and Barge [illegible]

[illegible]

Stranding of s.s. Uranium.

[illegible] on the automatic buoy or at Chebucto Head, as fog signals are well known to [illegible] vessel and the movements of the engines prior to the stranding.

Loss of the s.s. Evelyn.

[illegible] of Cape Breton Island, N.S., Jan. 9, re[illegible] master, G. Higginbotham, for remaining at [illegible] handed, besides taking into [illegible]

Trade and Supply Notes.

[illegible] time we wish our readers distinctly to under[illegible]

[illegible] and factory supplies for the American Vanadium Co. and the Flannery Bolt Co., Pittsburgh, Pa.

[illegible] built for 150 pounds working pressure by the International Engineering Works, Ltd., Amherst, N.S.

THE CANADIAN CAR AND FOUNDRY [illegible] shops at Fort William, Ont., a 375 h.p. Robb vertical two crank compound engine [illegible] revolutions a minute. It is being built by the International Engineering Works, Ltd., Amherst, N.S.

[illegible] mikado type locomotives recently ordered [illegible] Locomotive Works, will be equipped with [illegible] chased by the G.T.R., and will have a total weight in working order of 276,000 lbs.

[illegible] ing to completion a temporary building to replace the one recently burned, and that it would positively have a part of its forge department in operation within a week [illegible] delivery requirements of its customers. This building will be covered within ninety days by a modern fire proof steel construc[illegible] general dimensions of this building will be [illegible] with 20 ton electric crane, 60 ft. span; with two bays, each to be served with five ton electric crane, 20 ft. span. At the end of this building and continuing 100 ft., there will be a 50 ft. span electric crane runway, 20 ton capacity, for handling raw materials and shipping. This will insure the company against further interruptions in its production, on account of fire, and will [illegible] equipped as it will be with steam hammers, hydraulic forging presses, annealing [illegible]

A Very Large Mine Hoisting Engine [illegible]

Canadian Railway and Marine World.

April, 1913.

The Transportation Situation at the Head of the Great Lakes.

By Frederick H. Moody, B.A.Sc.

The twin cities of Port Arthur and Fort William occupy a unique position in the transportation of this country, being the focal point for all traffic both east and west, whether by rail or water. This might be qualified by the statement that the opening of the new National Transcontinental Ry. across the open country to the north of these two cities will, in a degree, deprive them of the unique position of requiring all traffic to pass through them. That is not to say the volume of traffic handled at these ports will in any degree diminish, as such will not be the case, as the grain crop is growing by such leaps and bounds, that several other outlets to that vast field are required, and would be unfelt at the head of lake navigation.

These twin cities occupy a decidedly novel position. On the one side is the vast manufacturing east; on the other the vast grain producing west, each producing that which the other lacks. Added to that is the fact that the middle west is devoid of coal, and requires to bring in its supplies from the coal fields of the eastern United States. The greater part of this bulk freight, such as coal and grain, is transhipped at the head of the lakes, using water transportation on the eastern part of the journey, and rail, westerly. As an idea of the volume of traffic that passes through these two towns, the grain returns during the navigation season of 1912 are striking. Grain of all kinds, but principally wheat, was shipped out of the twin ports in Canadian and United States vessels to Canadian and United States ports, to the extent of 113,257,676 bushels. This shows the amount of elevator space required to accommodate even a portion of this vast production. Elevator accommodation seems to be the vital problem with which the twin cities have at present to contend.

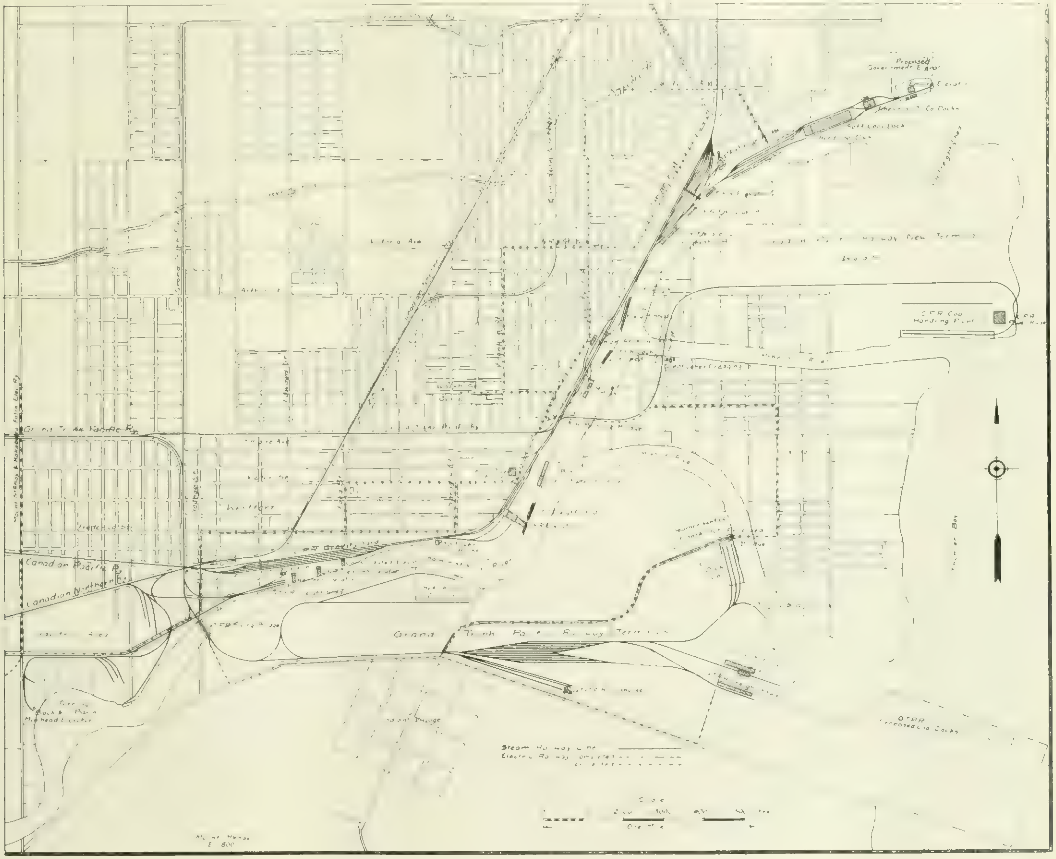


Fig. 1.—Plan Showing Railway Connections Around Fort William.

Fort William.

Fort William is most admirably situated with one of the finest natural harbors in the world. Originally founded as a fur trading post of the old Northwest Co., it clustered about the mouth of the Kaministikwia River, which at this point empties into Thunder Bay. The settlement grew up around the original fort, gradually forming the present city. The selection of this point for the original fort was ideal, as the Kaministikwia River with its tributaries opened up an extensive territory to the fur trader, making the focal point of all the expeditions at a place favorably situated for the sending of furs and bringing in of supplies. Much the same conditions exist today, only the nature of the commerce conducted has changed, and with it the old style of transportation.

Reference to the map of Fort William, fig. 1, will give an idea of the layout of the port. The river, as it approaches the lake from the west, divides, forming three mouths, the two minor streams being called the Mission and McKellar Rivers. These three mouths form two islands—Island no. 1 and Island no. 2. Including the shore of the rivers along the islands, and on both shores of the mainland, Fort William has a harbor frontage of nearly 28 miles, a condition which is probably without peer on this continent for a city of similar size.

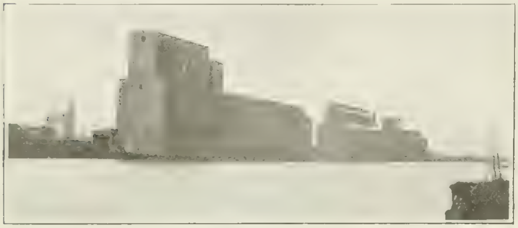


Fig. 2.—Several C.P.R. Elevators at Fort William.

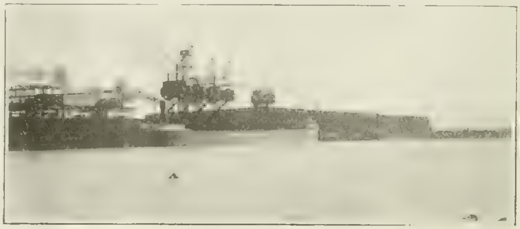


Fig. 3.—Old C.P.R. Coaling Plant at Fort William.

THE CANADIAN PACIFIC RY. was the first railway to enter the town, the first through train between Montreal and Winnipeg passing through in 1886. At that time it was nothing more than a straggling settlement, fringing the river near its mouth. In consequence, the C.P.R. was enabled to easily secure what property it needed for contemplated future expansion, gathering in all the property along the whole length of the river as far west as Westfort, the westerly suburb of Fort William. The C.P.R. has thus had a stretch of river front of upwards of four miles, which to the officials at that early day, seemed more than sufficient to meet the requirements for all future expansions. How short their vision has fallen has recently been witnessed by the cramped condition of the C.P.R. terminals, necessitating the purchase by the company of a large stretch of ground on Island no. 1.

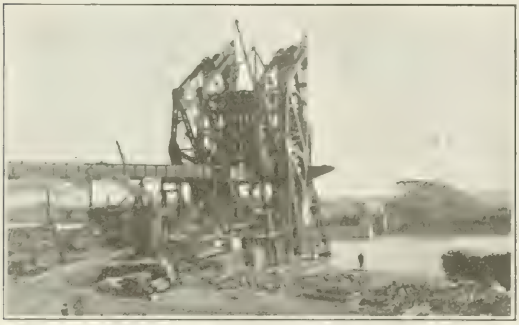


Fig. 4.—Bridge Leading Across to New C.P.R. Terminals, Fort William.

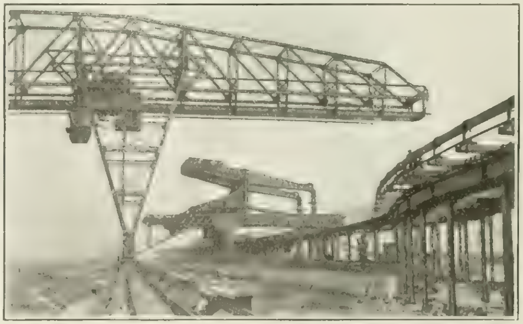


Fig. 5.—New C.P.R. Coal Handling Plant on Island no. 1

The C.P.R. coming in from the west, strikes the river front near the western city limit, from that point following the river, leaving the latter near the northern city limit. The original ramifications of the company were near the mouth of the river, near the location of the present locomotive house. Here were located the original yards, station, etc., but the latter development has taken the major portion of the development along the line to the west.

For the handling of the incoming grain traffic from the west, a large yard was constructed in Westfort. About two years ago, this becoming congested, additions were required, and in view of the success of the hump yard in operation at Winnipeg, this old poling yard was converted into a hump yard, a description of which appeared in Canadian Railway and Marine World, Nov., 1911. The conversion of the yard was simply carried out, all that was required being a single hump at the centre of the yard, in line with the yard cross over track, a similar cross over in the opposite direction being also put in, and the tracks outside the built up hump removed. This yard is only for eastbound traffic, its principal employment being that of breaking up incoming trains from the west, separating the various cars that are to go to each elevator along the river front. Reference to fig 1 will show that the yard is so located that there is not a single retrógrade movement, all but two of the elevators being further along the river. The cars running over the hump descend into the outgoing yard, and are taken along to the different elevators.

The C.P.R. has five elevators, located at points along the river from Westfort to the river mouth, as shown in fig 1. A has a capacity of 1,250,000 bush.; B, 500,000; C, 1,250,000; D, 3,750,000; and E, 2,000,000. In addition, a privately owned cleaning elevator at Westfort, is in process of construction. Four of these elevators are in pairs, C is an annex to A, which is the unloader, and similarly B is the unloader for its annex E, both of which are shown in fig 2.

Along the river front are other elevators, all served by C.P.R. tracks. From Westfort easterly, there are: Western Elevator, 1,250,000 bushels; Consolidated Elevator, 2,250,000; Ogilvie Flour Mill Elevator, 1,000,000; and Empire Elevator, 2,250,000. In addition, the Dominion Government has in prospect another elevator along the Thunder Bay frontage towards Port Arthur, to have a capacity of 3,500,000 bush. Other smaller elevators are located about town near the C.P.R. tracks.

Near the river mouth is located the old C.P.R. coaling plant, shown in fig 3, formerly employed for all kinds of coal, but in future to be used for coal not belonging to the company, the new plant on Island no. 1 handling the company's coal.

Near the point where the main line leaves the river are the old yards and roundhouse. The divisional shops adjoining are well equipped to handle motive power east and west of Fort William. To the west of these yards was the former location of the C.P.R. station. The trend of the town being in a southwesterly direction, the company about two years ago built a station further southwest, in the location shown in fig 1. It is built as a union station, to be used conjointly with the Grand Trunk Pacific Ry., which is inaugurating a passenger service on the Lake Superior Division this spring. Formerly, the terminal docks of the C.P.R. Upper Lakes Steamship Service were located near the former site of the station. At the same time that the station was removed to its present position, a new wharf and shed were built immediately to the east of the station, with which it is in easy communication through a subway under the tracks. This new freight shed and passenger terminal is 960 by 60 ft., and is one of the most complete terminal freight and passenger wharves in existence.

The mainland facilities becoming too crowded, and possibilities of further development in that direction becoming prohibitive on account of the high cost of the land, arrangements were completed whereby the C.P.R. obtained control of practically the whole of Island no. 1, on which it is the intention to construct large terminals to relieve the terminals on the mainland. To make possible the use of these two islands for railway and industrial purposes, the city was instrumental in having the Dominion Government dredge the McKellar and Mission Rivers to the standard requirements adopted for the Fort William terminals, viz., 500 ft. channel, with a clear depth all over of 22 ft.

For the C.P.R. to make use of the islands, it was necessary to bridge the channels of the rivers. The way of approach was to first cross to Island no. 2, and then across to Island no. 1. The first bridge is of the bascule type, double tracked and double decked, a full description of which appeared in Canadian Railway and Marine World for Sept., 1912. The bridge under construction is shown in fig. 4. An idea of its size may be gathered from the fact that it has a clear span of 186 ft., which, on account of its being set at an angle, gives a clear channel at the bridge of 125 ft. It is made double decked to carry street car and vehicular traffic on the upper deck, the method of approach at each end being as shown in fig 4. The crossing of the McKellar River is by means of a rolling lift bridge, giving a clear channel in that river for passing vessels.

The plans for the C.P.R. terminals on the island have not been completed, but a coaling plant and a freight shed and pier have already been built. In the centre of the island, it is the intention to lay out yards, but along the river front, except at the outer end of the island, the land is to be laid out into industrial sites, which will be convenient for both rail and water connections. The freight shed plans along the north side of the island contemplate 5 sheds, of which only one has as yet been completed. Much of the transhipment of package freight will be removed from the mainland when these are completed.

The coaling plant that has been constructed on the island, bordering on the McKellar River, is said to be the largest in the world. A description of it appeared in Canadian Railway and Marine World for Feb., 1912. It is for the exclusive use of the company's coal, and will ultimately have a storage capacity of over 2,000,000 tons. The old plant on the mainland will be used for all other coal that is taken up the lakes. An idea of the size of the plant can be gained from fig. 5. It extends nearly as far in the other direction as can be seen in that view, and the bridge on the left extends some 500 ft. On the extreme right is the McKellar River. From the hold of the boat, the coal is lifted by the large fulcrumed arms, deposited in the space between the walls shown, where it is picked up by the large crane on the left, carried and dropped in the vast storage space to the left. The loading of the cars is accomplished in a reverse order. On the elevated track to the right are scale cars that are loaded with coal from the travelling crane on the left, and which run along to loading machines under the elevated track, into which the coal is dropped, the exact loading of the car being thus accomplished without further trimming. In the western coal trade, box cars are used exclusively, grain travelling east in them, the same cars going west loaded with coal, thus maintaining a balance in the traffic, with a minimum of lights. The trackage has been so arranged that there is a continuous movement of the cars through the coaling plant, it being expected that a switch will be constantly employed bringing in and removing the cars, the local movement in the plant being obtained through an electrical winch. The whole plant is electrically operated, a substation at the far end supplying the electricity for local use. The plant was put in operation last October, and about 100,000 tons of coal unloaded from vessels before the close of navigation. It will be stored there pending the completion of the two bridges across the channels to the two islands.

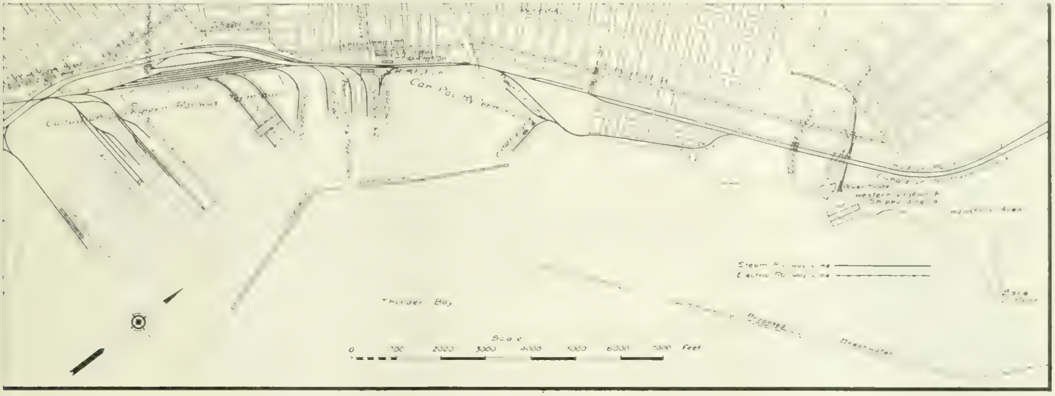


Fig. 6.—Plan Showing Railway Connections Around Port Arthur.

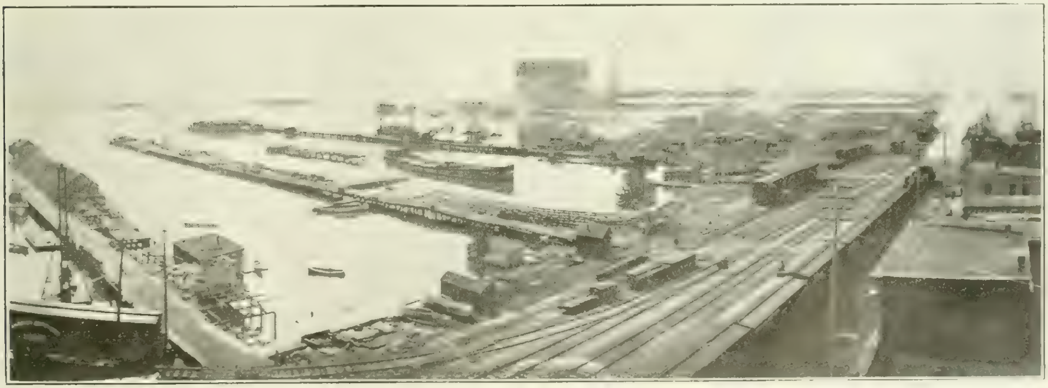


Fig. 7.—Panoramic View of Canadian Northern Ry. Terminals at Port Arthur.

GRAND TRUNK PACIFIC RY.—The late advent of the G.T.P.R. into the western transportation field made it necessary for it to exercise considerable ingenuity in obtaining access to the different large terminal points reached by competitive lines. At the head of the lakes, considerable time was spent in determining the merits and determining circumstances that would influence it in going into Fort William or Port Arthur. The inducements, both natural and those offered by the town proving most attractive, Fort William was decided upon as the lake terminal point. The city was instrumental in securing for the company a 1,600 acre tract of land to the south of the city, on what was known as the Mission property, a piece of land years ago set aside as an Indian reservation. This was the only available outlet to terminal water, as all the waterfront on the north side of the river and on Island no. 1 was already taken up or contracted for, and it has proved to be an ideal site for railway terminals in view of its 7 miles of waterfront.

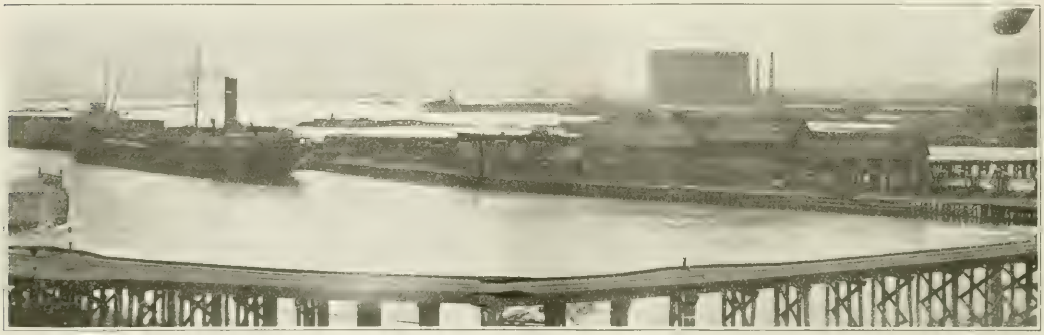


Fig. 8.—Piers to the Rear of Canadian Northern Ry. Station at Port Arthur.

The G.T.P.R. line from Superior Jct. enters Fort William from the west over Empire Ave., turning due south near the western city limits and crossing over the Kaministikwia River on a swing bridge. From that point, lying in an east and west direction, are the company's terminal yards, which include a 12 stall locomotive house, which it is intended to enlarge from time to time as occasion demands. The terminal wharves are to be at the east end of this projection of land, at the mouth of the Mission River, which, as mentioned earlier, has recently been dredged to standard conditions. The whole arrangement is as shown in fig. 1.

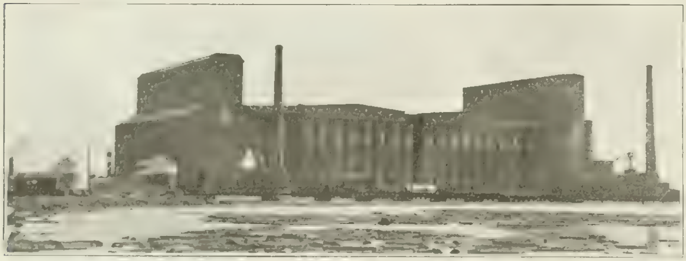


Fig. 9.—Canadian Northern Railway Grain Elevators.

In the position indicated, what is said to be the largest grain elevator in the world is in course of construction. The initial portion of the elevator, completed two years ago, had a capacity of 3,250,000 bush., and this has been added to during the last year, making a total storage capacity of 6,000,000 bush. The ultimate capacity of the first large unit will be 10,000,000 bush., with five more like it to follow as the grain traffic demands. In front of the elevator, there has been dredged out a turning basin, the dredgings from which have been used to form the land to the east of this point. On this made land, it is proposed to construct large coal docks for the handling of company as well as private coal. The nature of the coal dock construction and plant has not yet been decided upon.

On the south side of the turning basin are to be three freight sheds, 900 by 60 ft. each, two of which have been built. To the north of the elevator site is a rail dock 600 by 60 ft. The whole frontage of the freight sheds and elevators in the dredged slip has a cribbed wharf with concrete top. The property on the Mission reserve north of the G.T.P.R. along the Mission River has all been set aside as industrial sites, in the same manner as that reserved by the C.P.R. on Island no. 1, and there are already several large concerns established as indicated.

One of the big problems that confronted the G.T.P.R. was the entrance into the city for passenger trains. At present, the line that runs down over the Kaministikwia River to the Mission yards, has a branch leading down alongside the river, immediately to the south of the C.P.R. hump yard in Westfort. This comprises the present passenger and freight terminal for the line, a freight shed and pier having been completed at this point for temporary accommodation. Entrance to the union station is now being completed, the trains instead of turning south and over the river will continue along Empire Ave., joining the C.P.R. line a short distance south of the union station. By this means entrance to the heart of the city is obtained, the use of the street being under agreement with the municipality. Opposite the union station on the river front, the company has acquired a 600 ft. frontage on which a 600 ft. wharf and 400 by 60 ft. freight shed have been constructed, so that passengers from the boats may be landed conveniently to the station, there being a subway nearing completion under the railway yards to provide for access between the station and water front.

THE CANADIAN NORTHERN RY. enters the town near the same point as the other two lines, in the suburb of Westfort. From just north of the C.P.R. gravity yard, the line swings off in a northeasterly direction, continuing on a tangent nearly 3 miles long into the heart of Port Arthur, where its terminals are located. Other than the station, the C.N.R. has practically no connections in Fort William. The station is now located on the long tangent mentioned. A line branches off from this siding at Albert St., turning north 3 blocks west of Syndicate Ave., the station being located where this section crosses Victoria Ave. This section again connects with the tangent near the northerly city limits.

THE PORT ARTHUR AND FORT WILLIAM Electric Ry. is owned and operated by the corporations of the two cities. The lines in Fort William are quite extensive, reaching from the north city limits, through Westfort, and on to the G.T.P.R. Mission terminals, following the main thoroughfares through the older section of the city to the bridge across the Kaministikwia River, from which point, through the Mission, it has blazed out a new road to the new terminals. At the north end of the town, there is a branch line running across to the old C.P.R. coal dock. Another branch leaves the main track near the river bridge, running along Montreal St. through the industrial section at the extreme west end of the town to the city limits. A contemplated line, that it is expected will shortly be built, will leave the present line in the Mission yards, cutting across to the Mission River, which it is proposed to bridge, up through Island no. 2, and then back to the main line over the upper deck of the bascule bridge shown in fig. 4. A very large section of the city is now well served, and with the opening of the new line, considerable property that is now inaccessible will be opened for development.

Port Arthur.

Considered from a transportation standpoint, Port Arthur is essentially a Canadian Northern town, as the present eastern terminus of the company's western lines is there, and in consequence, the C.N.R. has many activities in and around the city. The layout of the city is shown in fig. 6, a plan of the water front portion of the town, including all the railway connections into Port Arthur from both directions.

The harbor facilities have not been as well planned by nature as those at Fort William, as the whole harbor front is exposed to Thunder Bay, except in the small portion of the centre of the waterfront protected by a breakwater. Laboring under this disadvantage of limited harbor advantages, the most has been made of the situation with this limited breakwater, and in the near future, it is expected that a breakwater will be completed from end to end of the city as indicated in the plan, fully compensating for the drawbacks given the harbor by nature. The ultimate plans will provide for a well equipped and commodious harbor.

CANADIAN NORTHERN RY.—The portion of the town occupied almost exclusively by the C.N.R. is the whole waterfront from Arthur St., the centre of the town, to the extreme southern border of the city where it connects to Fort William. This section of the city is called the C.N.R. terminals. The C.N.R. station, which until recently was the end of steel and the terminal point for all traffic from the west, is at the foot of Arthur St., adjoining the shore end of a wharf. The station is in addition the headquarters of the division from Port Arthur to Winnipeg. At the corner of Cumberland and Arthur Sts., the main corner of the town, the C.N.R. built the first of a series of large hotels, the Prince Arthur occupying nearly a whole block, and looking down over the bay. This was completed and put in service about 3 years ago, and the impetus given to tourist traffic thereby has been considerable. The summer traffic coming up the lakes on the lines of steamships that make Port Arthur their port of call, mostly lands on the piers to the rear of the C.N.R. station, within a convenient distance of this large hotel, which has the characteristics of the large city hotels of the better class.

To the south of the station are the various bulk freight wharves. Figs. 7 and 8 give a panoramic view of these terminal facilities as seen from the station. In the immediate foreground are the various C.N.R. package freight piers. Further along the harbor is the huge C.N.R. grain elevator, for many years the largest in the world, still holding that position, but there are larger ones under way. The capacity, 12,000,000 bush., has already been taxed to its limit and a considerable addition is being made, the unit construction of the elevator to be seen in fig. 9 making this possible. The location of the elevator is out in the harbor on a pile foundation, both sides of it being approached from the shore by a trestle.

Further along are the joint piers of the Canadian Northern Coal and Ore Dock Co. and the Atikokan Iron Co. The former plant is quite large, as shown in fig. 10, extending out into the harbor a considerable distance. The storage capacity of this plant is 500,000 tons of coal, handled by a system of belt conveyors, capable of discharging a 12,000 ton cargo in 12 hours.

Further along the harbor on the C.N.R. terminal property is the Thunder Bay Elevator Co.'s elevator.

The C.N.R. line entering Port Arthur from Fort William on the long tangent before referred to, runs into the terminal yards of the line, which are situated to the west of the C.N.R. elevators. Adjoining is the terminal locomotive house. Proceeding through the town, the line, after passing through the station, connects with the C.P.R. line, again following its own parallel right of way beyond Stephen St., to near the north city limit, where the two lines separate, the C.N.R. following the lake shore more closely from there to Nipigon, where the lines finally separate. This section, from the station northeast, is a portion of the new line the C.N.R. is opening through the clay belt of New Ontario.

THE CANADIAN PACIFIC RY. terminals at Port Arthur are not very extensive, with its vast terminals so close at hand in Fort William. All the waterfront property for some little distance north of the C.N.R. station, is C.P.R. terminal property. The station is located diagonally opposite the C.N.R. station, between the C.N.R. hotel and the waterfront. Practically all the terminal water facility possessed by the C.P.R. in Port Arthur is a grain elevator about half a mile north of the station. The C.P.R. main line follows that of the C.N.R. in a general way to the centre of the town, coinciding with or paralleling it from that point to the north city limits.

PORT ARTHUR AND FORT WILLIAM Electric Ry.—The head office of this municipal enterprise is in Port Arthur, where are also located the shops. The line from Fort William, entering on the Fort William Road, finally strikes Cumberland St., which it follows to the north side of Current River, beyond which is located the large industrial tract of land owned by the municipality. A branch of the electric railway runs up Arthur St., branching off to the south when it reaches the top of the high ground back from the shore, this line being about 1½ miles long. Between Fort William and Port Arthur, there is another branch line running out to the country club, along a road running due west. This line is upwards of a mile long.

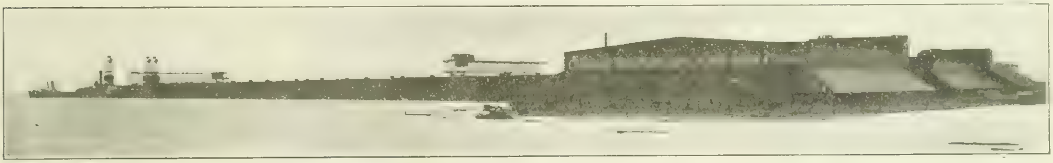


Fig. 10.—Plant of Canadian Northern Coal and Ore Dock Co., with Atikokan Iron Co., Beyond.

Change in Intercolonial Railway's Accounting System.

In connection with the reorganization of the Government Railways operating and maintenance staff, which appears on another page of this issue, a change has been made in the system of accounting on the Intercolonial Ry., the system in use on the Canadian Pacific and many other lines having been adopted.

The system heretofore in use on the I.R.C. was one under which everything was assembled in Moncton, and the accounts kept in the general offices.

Under the new system which is being put into effect, the accounting will be done by divisions. An accounting staff is being placed in the four superintendents' offices, and these offices will report to Moncton, where the total accounts for the system will be assembled.

Under the new system it will be possible to hold each superintendent responsible for the expenses in connection with the operation of his division, and the management will be enabled to make comparisons, so as to ascertain which superintendent is carrying on the work in the most economical manner, and will be in a position to more quickly check any waste in construction or operation.

Tracing Carload and L. C. L. Traffic on the C. P. R.

W. E. McInnes, Freight Traffic Manager, C.P.R., issued recently a circular dealing with the tracing of carload and less than carload traffic. The circular says that the indiscriminate and extensive commercial tracing now handled in the company's various offices, and originating directly or indirectly with shippers or consignees, has assumed such proportions that is it defeating the purpose sought by the shipping public, overloading the wires, and consuming the time of many clerks to no purpose. The tracing of either carload or less than carload shipments before they have had ample time to reach destination does not hurry the movement of shipments, but prevents prompt attention to legitimate tracing.

This matter came under the consideration of the Association of Transportation and Car Accounting Officers, which made a report to the American Railway Association. In the course of the enquiries it developed that shippers and consignees did not hesitate to start a tracer immediately their shipments were forwarded. As the result of the discussion the American Railway Association passed a resolution deprecating the practice of tracing from initial point to destination immediately the freight is offered for shipment, and advising delivery or furnishing passing reports to shippers or consignees, and recommending that the tracing of shipments should be confined to show unusual delay in transit, and that no tracing be done until, in the usual handling of freight, shipments should have reached destination.

The C.P.R. took up the matter as affecting its own lines, and after full discussion among the freight and car officials at Montreal and Winnipeg, the circular was issued. The rules set out in the circular are as follows:—Tracers must not be started, or requests made to trace freight, until the shipment has had a reasonable time in which to reach destination, and then only at the request of shipper or consignee. When tracing a shipment give the initials and number of car, point of origin, route, date forwarded, commodity, and destination. Tracers in connection with carload freight should be addressed to F. A. Gascoigne, Superintendent of Car Service, Montreal, for Eastern Lines; and A. Hatton, Superintendent of Car Service, Winnipeg, for Western Lines. In the case of less than carload shipments, the necessary information should be obtained through agent at shipping point or destination.

On account of the increased price of fuel oil the Australian government will change its oil-burning locomotives back to coal burning.

An ample supply of draft timber bolts should always be kept on hand at car repair points, as the time required to straighten and rethread old bolts may cause serious delay to important lading. If new bolts are always available, old ones can be fixed up at a more convenient time.

Canadian Northern Railway New Boiler Tools and Methods.

The common practice of rivetting over the heads of staybolts, with a low crowned head on the flat surface of the inner and outer sheets of the firebox, has been the cause of a great deal of trouble in maintenance. On the inner side of the firebox, or for that matter any part of the boiler against which the direct heat of the fire impinges, the thickness of metal should be as slight as practicable, in order that the difference in temperature between the two sides of the sheet may be small, as the greater the thickness, the slower the heat flows, and the greater must be the heat potential, so to speak. Projections of metal are also undesirable, catching the direct heat and absorbing it more rapidly than the smooth surface. The slight projection of the flattened rivet head in the old construction, as shown at the top in fig 1, catches the heat, and it is a no uncommon thing to frequently have trouble from burnt out staybolts on heavy runs, creating a fruitful source of expense.

The method adopted by the C.N.R. is that shown at the bottom of fig. 1, the plate being so depressed on the fire side that the top of the rivetted staybolt head is flush with the sheet, creating no projections for the gathering of heat. An added advantage is the ease with which the staybolt head can be efficiently caulked, the head resting in a depression presenting an excellent caulking edge around the rim of the depression. The staybolt as actually installed in a sheet is shown in fig. 3. It will be noted that the outer sheet is still treated in the usual manner.

The method of preparing the plate required the development of special tools. The plate is first perforated with a 7-16 in. [illegible] reamer. The sheet is then annealed, prior to the depressing process. A punch and die of the form shown to the right in fig. 1 is employed for the depressing, the nose of the punch forcing itself through the ½ in. hole, drawing out the plate to the form shown below the punch. The sheet as actually drawn in practice is shown in fig. 3, the drawing out conforming very closely to the designed shape. It will be noted that the staybolt bearing is lengthened, a desirable factor. In inserting the rivet, a 4 thread length is projected through for rivetting over, which is a larger amount than would be possible with the flush plate. The heading snap is also shown in fig. 3, centering on the centre safety hole. The holding power thus obtained is considerably increased.

Patchbolts usually create trouble from their inability to be properly tightened down to hold the patch to the sheet, due to the roughness of the mating surfaces. The C.N.R. method is illustrated in fig. 2. The patchbolt is of the usual construction, partially severed under the square head for ease in cutting off. A special air hammer tool fits over top, the lower face of the tool being cupped to a radius slightly smaller than that of the top of the patchbolt head. The head of the tool is hexagonal. After tightening up as much as possible in the usual manner, with a wrench on the square head of the patchbolt, the tool is put on, and, under the vibration created by the hammer, the bolt is tightened down still further by a wrench on the hexagon of the tool. The hammering tends to draw the plates tighter together, creating a tight joint. The smaller radius cupping on the end of the tool bears on the patch around the rim of the patchbolt head, raising a seam all round the bolt. A perfectly tight joint is assured.

The method of rivetting and the rivetting snaps employed are shown in fig. 5. On the right is a tightening up snap. The lower head of the rivet is held securely by the holder on. This hollow snap is slipped over the top of the red hot rivet, forcing the plates tightly together. The rivet head is then ready for forming. This would seem to be a much preferable method of tightening the plates than that of hammering all around the rivet on the plate as is the usual practice.

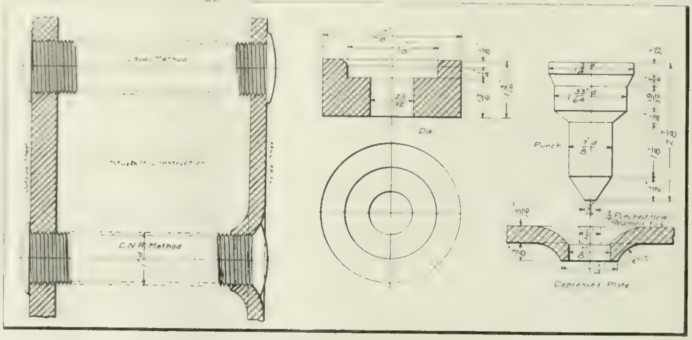


Fig. 1.—Punch and Die for Depressed Staybolt Holes.

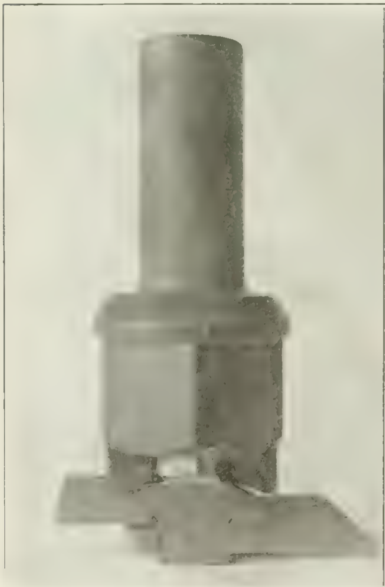


Fig. 2.—C.N.R. Patchbolt Practice.

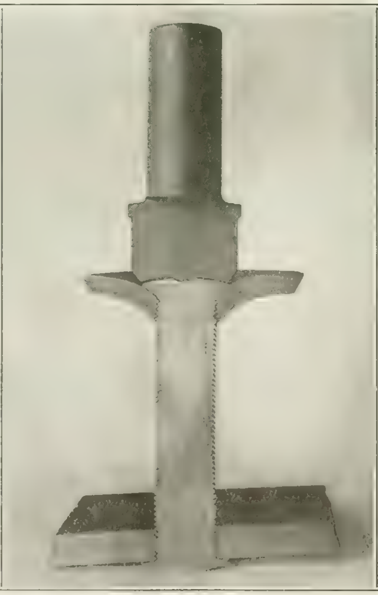


Fig. 3.—C.N.R. Staybolt Practice.

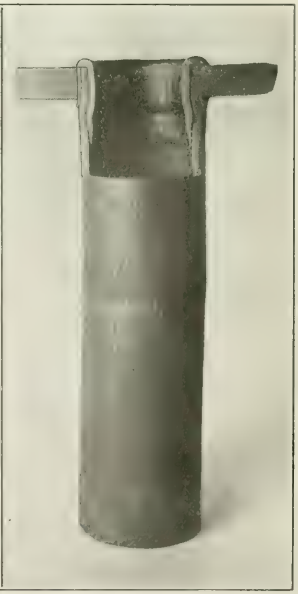


Fig. 4.—C.N.R. Tube End Strengthening Practice.

The snap on the left is that used for ordinary cone headed rivets, which of course centre themselves naturally. In the case of flat headed rivets, trouble is usually experienced with the rivet running over unless more than usual care is exercised by the boilermaker. The snap shown in the centre of the group overcomes this running over tendency in a very simple manner. In the centre of the snap, a ⅛ in. hole is drilled to a depth of about ¼ in. The first blow of the hammer on the head causes a small amount of the metal to flow up this hole, forming a small tit that automatically centres the snap on the rivet, a good rivet resulting.

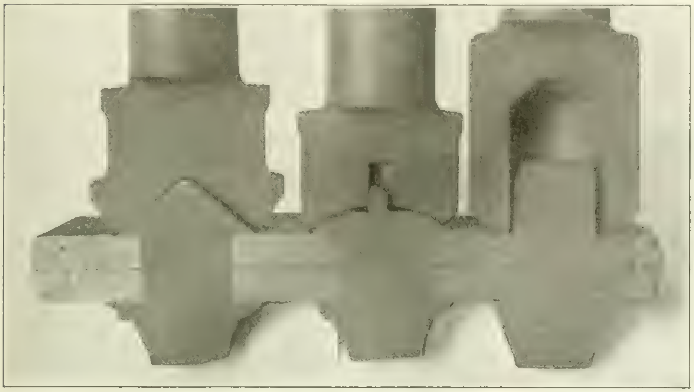


Fig. 5.—C.N.R. Practice in Expanding Tubes.

Hand operated flue expanders, as almost universally used, are an ever fruitful cause of trouble. In the first place, they are far too slow in action, and the very fact that their action is a rotary one makes their use rather difficult in cramped places, such as the side tubes in the fire or smokebox. The C.N.R. practice is shown in fig. 6. An expanding member, made up of six segmental pieces of the form indicated, and held together by a stiff rubber band, are forced out against the tube wall by a tapered pin driven in by an air hammer. The annular recess around the expander, with rims around each side of the recess, forces the tube out in rings at each face of the tube plate. Between the tube and plate, there is the usual copper ring. The action of the expander is to so expand the tube in and around the plate opening as to form a solid joint. To finish, the outer edge is beaded over with a beading tool in the customary manner. The ends of tubes that have been thinned down by repeated expandings, to such a degree as are deemed unsafe, are reinforced by means of the same tool, inserting a short piece of smaller tubing in the end, after first cutting off the inner beading, the reinforcing piece being beaded over in its place, all as in fig. 4.

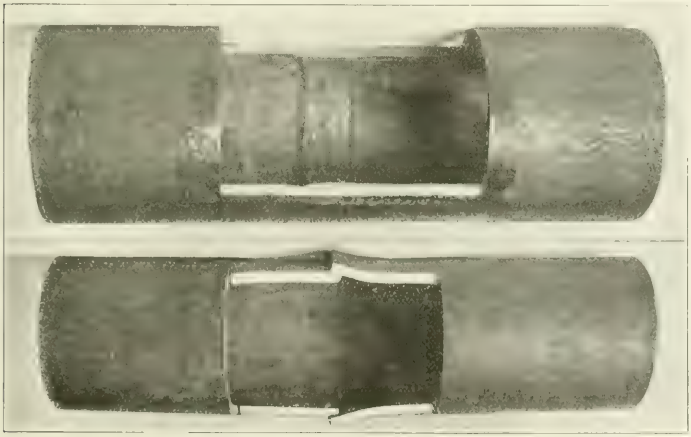


Fig. 7.—C.N.R. Practice of Safe Ending Tubes.

The method of safe ending tubes is shown in fig. 7. The C.N.R. practice in this respect resembles that of many other lines. The safe end is flared, and slipped over the heated end of the tube, neither part being bevelled, a practice that is used with a considerable degree of success in some shops. After heating both parts, they are welded together in a rotary swedging machine, producing a joint like that shown in the lower part of the illustration. All the weld seam is on the inner surface.

The views that illustrate this article are from a set of photographs made up by the C.N.R. mechanical department for distribution to all the locomotive houses on the system. It is the intention to make them all up on a large card, which will be framed and hung up in a conspicuous place in the locomotive house, so that all will know the proper use of the tools, resulting in a more uniform method of handling running and general repairs at all points.

Grand Trunk Pacific Railway Terminal Facilities at Edson, Alta.

For an outlying point on the G.T.P.R., Edson has been developed to a considerable extent in the short time the line has been running in there. The yards are fairly extensive, and the shops are equipped to handle repairs of a more or less heavy nature.

The car shop is 260 by 40 ft., and 24 ft. high, containing two through tracks, each of which can take 6 cars. Adjoining is a building 102 by 15 ft., 12 ft. high, for offices, store room and paint shop. Both buildings are of wood. All classes of cars are handled here, including passenger equipment, as many as 900 cars a month undergoing repairs either in the shops or yards.

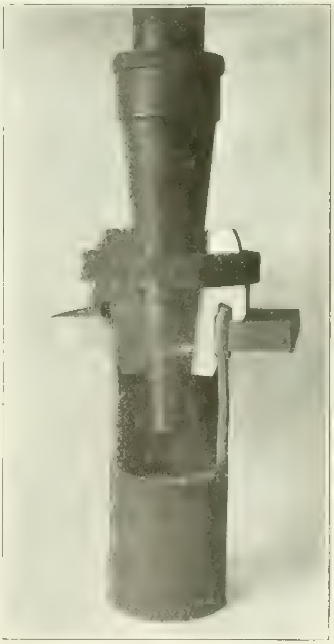


Fig. 6.—C.N.R. Practice of Expanding Tubes.

The car shop pay roll contains from 35 to 40 names.

There is also a 12 stall roundhouse, with a large divisional machine shop adjoining. This shop is equipped with both metal and woodworking machinery, the former for locomotive running repairs, and the latter for planing the lumber used over the system, being shipped east and west from Edson. Both roundhouse and machine shop are brick structure, employing about 75 men. The 1,000 ton coaling station was described in some detail in Canadian Railway and Marine World for July, 1912.

A blacksmith shop employs 3 blacksmiths. The equipment includes a steam hammer, steam shears and heavy punch. The yards contain in addition to the through main line track, 17 yard tracks.

We are indebted to J. Flynn, Car Foreman, Edson, for the foregoing information concerning the shops and yards.

Railway Mechanical Methods and Devices.

Forging Machine Work at the Canadian Northern Railway Shops.

Typical examples of the intricate kinds of work that can be handled on the forging machine in the C.N.R. Winnipeg blacksmith shop, J. Kiebler, Foreman, are shown in the two accompanying illustrations. Fig. 1 shows a finished eye bolt and the dies used in its production. F and R indicate the front and rear faces of the dies respectively. The initial step is that of forming the collar on the eye end of the bolt. This is performed by gripping the body of the bolt in the roughened lower recess in the dies; the die shown at the lower left hand corner of the two parts, mounted on the ram, upsets the collar into the annular recess around the die head, leaving enough stock in the hollow die for the eye.

The first step in forming the eye is that of upsetting the end, performed in the position a. The collar is set in the fitting recess, and after the cross slide closes the dies, a plunger comes in from the rear, upsetting the end into the form of a round ball in the chamber a. The next step is that of placing the upset ball end in the recess b, with the collar in the locating recess, the cross movement of the dies flattening the round head. Following this, the flattened head is placed in the cavity c, behind the projecting lug, the bolt being vertical. The closing of the dies holds the flattened head, a plunger on the ram then coming through the guiding hole in the lug at c, punching through the eye hole. The final operation is that of shaping the punched eye head at d, the cross slides on closing forming the eye into its final shape as shown supported between the dies.

The grab iron shown with its forming dies in fig. 2 is slightly more complicated in construction. The bar stock is placed in the groove a, from the front, placing the end against the rear stop. The cross movement of the dies gives the bar end an offset. This offset is next placed in the recess b, and held against the front of this chamber. The closing of the cross slide holds the stock, while a die on the end of the ram entering the chamber b upsets the end to the shape of the end of the chamber, which is the shape of the completed end of the grab iron. Following, the stock is carried to c, the upset end being placed therein, with the upset downward as in the upsetting operation. A punch on the end of the ram, coming through the guiding hole in the plate attached to the rear face of the stationary die at c, punches the bolt hole through the upset stock. All that is now required is that of bending the stock through a right angle, accomplished at d. The stock is placed in the groove in the top of the block attached to the top of the stationary die, with the upset end vertical, bearing out against the attached stop on the rear end. The lug on the top of the movable die on the cross movement of the die, bends the upset end into the cross channel in the rear face of the attached die, finishing the grab iron. The other end of the grab iron is finished in the same manner.

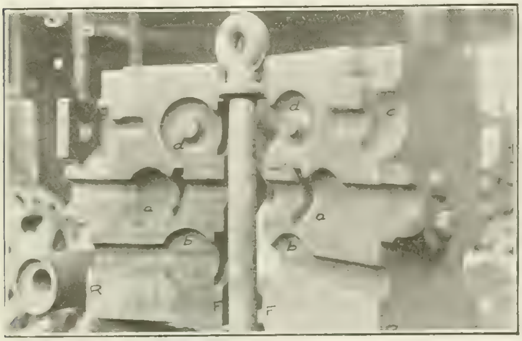


Fig. 1.—Dies for Forging Eyebolt in Forging Machine.

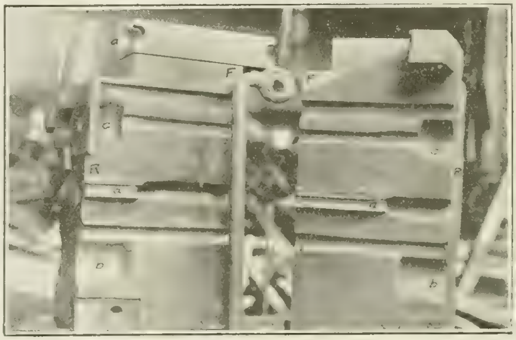
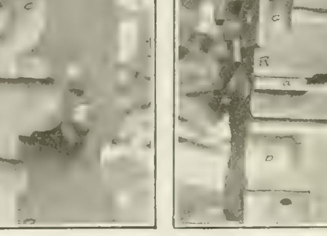


Fig. 2.—Dies for Forging Grab Iron in Forging Machine.

Plating Headlight Mirrors at Grand Trunk Railway Port Huron Shops.

The customary practice in plating the interior of the parabolic headlight mirrors used on locomotives is to solder pieces of sheet metal over the two electric carbon openings, and after making a tight job, to fill the interior with the electrolytic fluid for the plating, making the headlight itself one electrode, and the suspended article in the bath, the other electrode.



Plating Headlight Mirrors.

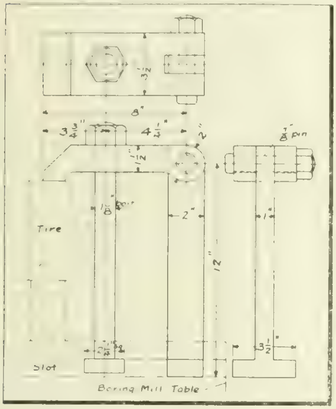
The practice at the G.T.R. shops at Port Huron, Mich., is different from this, a simpler scheme having been devised, the arrangement being shown in the accompanying illustration. For each of the different sizes of headlights, there is a heart shaped loop similar to the one around the outside of the headlight mirror in the illustration. Opposite the openings for the carbons, there are slots in the girdling band, into which 3-16 in. screws can be fitted. Over each hole, a section of thick rubber is placed, backed up by a smaller sheet of thin metal. On this plate, in a recess in the centre, a ball headed screw bears, supported from the girdling frame. This holds the rubber tightly over the hole, providing a leak proof receptacle, which is used in a manner similar to the soldered hole mirrors used in many other shops.

The monetary saving in the time required by the plater to plate a mirror, including the time of preparation, is quite considerable. In addition, there is the factor of a better job being produced. When the openings are soldered up, extreme care must be exercised after the plating, in the removal of the patch, for if the metal be too hot, the plating will be injured.

Tire Clamp at Grand Trunk Railway Stratford Locomotive Shops.

A handy tire clamp for the boring mill is shown in the accompanying illustration, as used in the G.T.R. locomotive shops at Stratford, Ont. The tire to be bored is clamped concentrically on the boring mill table, with the usual vise jaws clamped to the mill table, bearing inward on the tire flange. In addition to the vise holding, it is customary to hold the work down on the table with clamp bolts and strips resting on outside blocks. The clamping bolt has a T head on the lower end fitting into one of the channels in the table. A cross strip is held down on the work and a block of equal height by this bolt, clamping the work securely in place with the assistance of the centralizing vise jaws. This method is more or less unhandy from the fact that on every occasion the machine has a new tire inserted, the bolt, block and clamp require to be removed and replaced on the tire.

The tire clamp to be here described, combines all the advantages of the older method of clamping in a simpler form, for the whole device can be lifted bodily and placed in position on the mill. A 1 x 2 in. vertical rod of the requisite height, has the lower end formed to fit in the table slot, in which it remains permanently during the period in which tires are being bored. The clamp bar is hinged to this vertical bar at the top, and is tightened down on the tire by a 1¼ in. bolt fitting the table channel at the lower end. The bolt is off centre to give the greatest possible leverage on the tire. When removing the tire, all that it is necessary to do is to remove the nut and swing back the clamp arm. It is a very valuable boring mill adjunct, and might be employed to equal advantage on other jobs of a duplicate nature. Its use on the drill press likewise suggests itself.



Tire Clamp for Use on the Boring Mill.

Air Hoist and Screw Drill.

The accompanying drawings show a home made air hoist for roundhouse use, which is very serviceable for hoisting or lowering the heavy parts on locomotives Fig. 1 shows the elevation view of the hoist and the air cylinder with piping attachments which may be arranged to suit connections. An extra attachment, which is put on at the position indicated in fig. 2, is available to put in the hoisting cable from one side when it may be required to raise or lower air pumps on the locomotive.

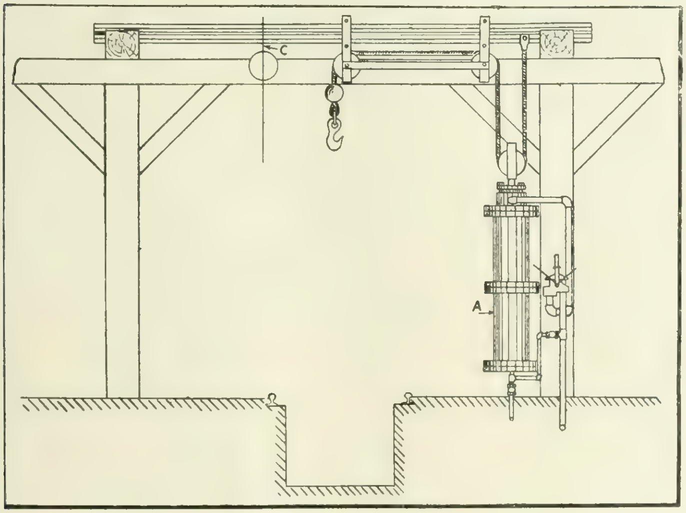


Fig. 1.—Air Hoist for Roundhouse.

Fig. 3 shows a ratchet or screw drill specially adapted for work in places where the space for drilling is limited. The drill may be made as short as possible and is combined with a feeding screw as shown. The end of the drill into which the thread is tapped may be made of a square form readily adaptable to an ordinary spanner wrench for turning the drill. The entire length of the device need not exceed 4 ins. Roundhouse men are well aware that it frequently happens that there are broken studs or bolts in spaces where the ordinary ratchet cannot be operated. A drill of this kind will be found not only of service in many instances, but will also help to avoid removing other parts of the locomotive to make room for the operation of a regular ratchet.—J. G. Koppell, in Railway and Locomotive Engineering.

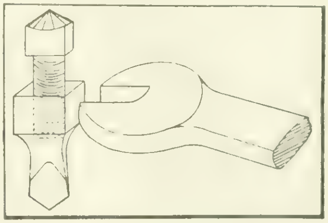


Fig. 3.—Screw Drill.

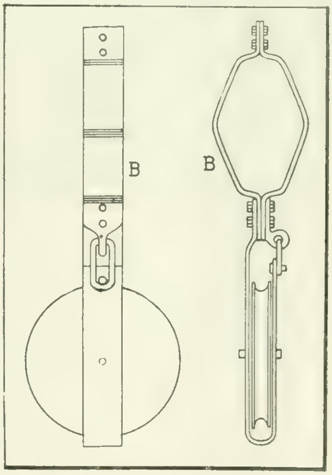


Fig. 2.—Attachment for Air Hoist.

The Canadian Pacific Railway's New Station at Edmonton.

One of the smaller works of construction which the C.P.R. is carrying out in the west is a new station at Edmonton, Alta., which is necessary owing to the rapid growth of the city. This station will have entrance both on Jasper Ave. and Ninth St., but the main entrance will be on the latter thoroughfare where a large carriage space has been provided. The tracks are elevated over Jasper Ave., and a stairway entrance leads to the concourse. At this point there is a turnstile exit from the tracks. The main entrance is imposing, and ample space has been provided for standing vehicles, with a sidewalk for foot passengers, fourteen feet wide. The entrance from Ninth St. into the main building opens directly into the general waiting room, which is 50 ft. square, and on one side have been conveniently placed the elaborate ticket offices. Leading from the main waiting room is a corridor 34 ft. long, at the end of which is arranged the baggage room, with large counter space, and adjoining this is the parcel room. On either side of the corridor a waiting room for women and a smoking room for men have been provided, each fitted up with complete toilet service. Immigrant quarters have been arranged under the main building, and entrance is made through a suitable corridor from the tracks northwards. This accommodation contains every convenience, and is artificially ventilated. The remainder of the huge basement is occupied by the baggage department with the exception of an allotment to the Dominion Express Co. for its business.

The exterior of the main building and the retaining wall running along Jasper Ave., will consist of reinforced concrete, with a certain amount of metal facing to relieve the dullness of the concrete, which will be specially treated with carborundum blocks. These will be used for rubbing the surface of the concrete smooth, giving the structure somewhat the appearance of a stone building. It will be in reality a monolithic structure, and its appearance will depend a great deal on the manner in which the cement surface will be finished by the carborundum blocks. The marquee which is to be erected at the main entrance will be of cast and wrought iron, with a glass roof, and supported on columns which will stand out to the edge of the sidewalk. The interior of the waiting room will be finished in cement, which will have a beautiful white surface, and will be very attractive. It will wash and will have the appearance of plaster, but will be of a very much harder substance. The base of the rom will be of marble and a terrazzo floor will be inserted. The wainscoting will be 4 ft. high, and above this the walls will be finished in pilasters and panneling with plaster cornices, and when colored or painted will give a very artistic effect. The front of the ticket offices, which are in the waiting room, will also be finished in cement, and above the counter will be iron grilles. There will be practically no wood used in the waiting room except the doors. The building was designed in the office of the Superintendent of Building Construction, F. L. Ellingwood, at Montreal, and the work is being carried out under the superintendence of the Chief Engineer, J. G. Sullivan, Winnipeg.

Grand Trunk Pacific Railway Terminals at Rivers.

Until last January, all the motive power work on the G.T.P.R. was handled at Rivers, Man., in shops built originally to accommodate divisional equipment only. Rivers is the first divisional point west of Winnipeg, and with the prospect of the new shops the National Transcontinental Ry. Commission was building for the company at Transcona, which have since been moved into, the divisional equipment was not made very extensive, and to accommodate the work, certain temporary arrangements and buildings were made necessary, as has been explained in previous articles.

Practically the whole divisional layout is shown in fig. 1, a view from the end of the coaling plant. It is an open prairie location. On the extreme left, out of the view, is the station. All the buildings shown are for the motive power department. The building on the extreme right is the locomotive foreman's office.

In the background is an 18 stall locomotive house, to the rear of which is the divisional machine shop, alongside the tall stack. From the volume of work handled, this shop proved unequal to the task, resulting in the light frame building to the right of the end of the locomotive house, in which the blacksmith shop is housed. To the right of this are the stores buildings for the blacksmith shop stock, and in front of this is the wheel storage ground, rather inconveniently located to the machine shop, but in the best location for loading that the limited facilities of the plant will permit.

Leading into the locomotive house are two tracks, the one to the right passing over the ash handling plant in the middle foreground. This track branches with three leads over the ash plant. The outer tracks of these three lead along beside the 400 ton coal plant, a description of which has appeared in these columns, and from which the view is taken. Wood for firing is piled on the right.

The buildings of the car shop are to the left, out of the view. These buildings are not very extensive, as all the car repairs of the system have been handled at Melville, Sask., the next divisional point west. As the view shows the grounds are of such extent as to allow of considerable expansion. In addition, the company owns a tract to the right of the land now utilized. On this tract there has been until recently, a tented city of considerable extent to accommodate the employes, the temporary location of the motive power department at Rivers making the construction of many permanent buildings such a poor investment as to keep away building companies. The company, to relieve this situation, has been compelled to construct some temporary two room buildings, which may be noticed in the distance, to the rear of the buildings.

In the distance, on the right, there will be noted a long trestle bridge, shown in fig. 2 at closer range. This is typical of the type of construction used on the line pending the time when it will be advisable to replace these structures with permanent steel trestles.

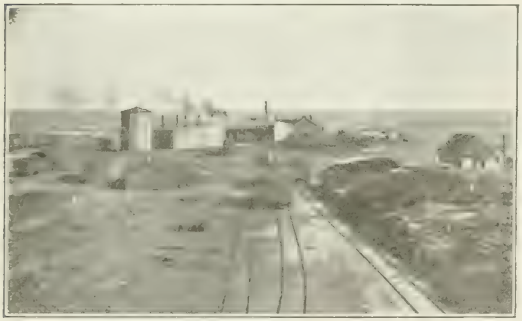


Fig. 1.—G.T.P.R. Mechanical Department Yard at Rivers, Man.

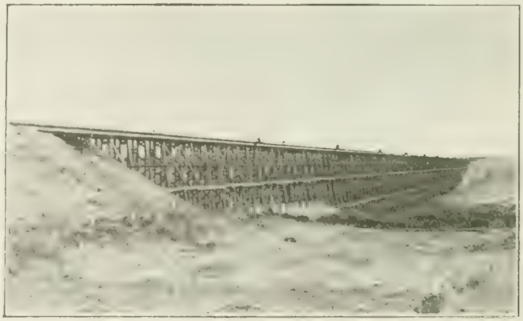


Fig. 2.—Typical Timber Trestle Bridge on G.T.P.R. at Rivers, Man.

Maintenance of Way by Contract.

A roadmaster in the Maritime Provinces writes:—I have read with much interest the articles on letting maintenance of way work by contract in Canadian Railway and Marine World for Oct. and Nov., 1912, and Feb., 1913. The article in the October issue favors a maintenance by contract, one reason given being that contractors are better equipped to do the work. I cannot understand why a railway company should not be able to equip its regular forces with material and tools as well as a contractor would be required to supply by specification.

My experience with contract work on railways has been, that in nearly every case after the contract was completed and passed by the engineers, the regular track forces had to spend a lot of time to bring it up to anything near the standard. My candid opinion is that as soon as railway officials recognize that in order to procure efficient track forces, they must cease to look upon the trackmen as common laborers, and navvies, and awake to the fact that the good trackman is a mechanic, and requires at least, as much education, intelligence and resourcefulness, as a brakeman or a fireman, and to be remunerated accordingly; then, and only then, will the efficiency of trackmen be increased. As long as the present system of employing men who cannot obtain any other employment, on account of their illiteracy, and ignorance of mechanical law exists, because they are cheap labor, the maintenance of way department will be up against difficulties.

It is, therefore, time to recognize the fact, that the man on whose faithfulness to duty, and on whose constructive intelligence, depends the safety of the lives of the great travelling public, and who holds up with his broad shoulders and honest hands, the foundation of the whole structure, should be rated, and his time and service valued as high as the men in the other departments. When this much needed reform is accomplished, and the track employes are recognized at their true value, the efficiency of the maintenance of way forces will be largely increased and progressive results will follow in economical maintenance. Then we will hear no more of track repairs by contract.

Algoma Central Terminals Bonds

There was offered in London, Eng., recently, at 95, an issue of £500,000 5% 1st mortgage 50 year gold bonds of the Algoma Central Terminals, Ltd., principal and interest unconditionally guaranteed by the Lake Superior Corporation. The Algoma Central Terminals, Ltd., has a capital of $100,000, all of which, with the exception of directors' qualification shares, are held by the Algoma Central and Hudson Bay Ry. Co. The company is authorized under Dominion charter to own and operate terminals, elevators, docks and other terminal facilities for railway and steamship lines. The company will own the following properties:—

At Sault Ste. Marie, Ont.—Station buildings, locomotive houses, machine, car and repair shops, yards, transfer tracks and right of way and other lands, including valuable water frontage. It is proposed to construct docks for the handling of coal, stone, and gravel; also commercial docks for the handling of passenger traffic, general merchandise and package freight.

At Michipicoten Harbor.—Ore docks and commercial docks now in operation, with track facilities, right of way and other lands amounting to about 1,000 acres, suitable for additional terminals, including the entire water front on Michipicoten Harbor. New pocket ore docks with a capacity for handling over 1,000,000 tons of ore a year will be constructed, also commercial docks for the handling of passenger traffic and general merchandise, and coal docks and coal storage facilities with a capacity of 250,000 tons of coal a year.

The proceeds of the bonds now issued will be applied in the acquisition of the above mentioned properties, which have been taken over by the company at a valuation of £266,288. The balance of cash provided will be utilized for the further extension of the docks and other terminal facilities at Sault Ste. Marie and Michipicoten and the construction of docks and terminals at Little Current. The company has leased all its property at Sault Ste. Marie and Michipicoten to the Algoma Central & Hudson Bay Ry. for 999 years, the railway company agreeing to pay as rental all expenses of maintenance and operation of the properties, together with the interest on the bonds and a sinking fund sufficient to redeem them at maturity. The properties at Little Current belonging to Algoma Eastern Terminals, Ltd., have been leased on the same terms to the Algoma Eastern Ry.

Steam Railway Statistics for 1911-12.

The returns for the steam railways in Canada for the year ended June 30, 1912, issued by the Comptroller of Railway Statistics, J. L. Payne, show that there were 26,727.23 miles of railway in operation, an increase of 1,330.37 miles over June 30, 1911. Of this increase over 83% took place in the four western provinces. In addition to this increase of mileage in operation there were 1,622.50 miles of line, chiefly Grand Trunk Pacific Ry., in operation, which are still regarded officially as being "under construction." In addition there are 1,752.49 miles of second track (an increase of 142.53 miles), and 6,148.92 miles of yard track and sidings (an increase of 599.39 miles), making a total of 34,629 miles of all tracks in operation, against 32,559 miles on June 30, 1911. Of the 8,825.80 miles of track dealt with as being under construction, 1,622.50 miles were in operation, 1,738.04 were completed, 3,990.76 under contract, and 1,474.50 were ready to be placed under contract. The railway mileage in operation in the several provinces, as compared with June 30, 1911, was as follows:—

	Miles	Miles
Ontario	8,545.56	8,322
Quebec	3,882.61	3,882
Manitoba	3,520.42	[illegible]
Saskatchewan	3,753.85	3,121
Alberta	1,896.64	1,494
British Columbia	1,854.53	1,842
New Brunswick	1,545.10	1,548
Nova Scotia	1,357.48	1,554
Prince Edward Island	269.33	269
Yukon	101.71	102
Total	26,727.23	25,400

A difference of 3.50 miles is made in New Brunswick in correction of an error in the returns of the previous year.

The total capital liability was $1,588,937,526, of which $770,450,351 represented capital stock, and $818,478,175 funded debt. This is an increase of $21,251,664 in stocks, and $38,996,661 in funded debt, a total of $60,248,325 in the year. By eliminating the mileage of Government railways and duplication in stock and bond issues the capital liability represents $50,832 a mile, a relatively low figure. The total amount paid in dividends on capital stock was $31,164,791, equal to a rate of 4.04%, as compared with $30,577,740, equal to a rate of 4.08% paid for the year ended June 30, 1911. Of the dividends $18,487,000 was paid on common stock, and $12,677,791 on preferred stock.

The cash aid given during the year totalled $5,892,818.34, of which $5,858,163.34 was paid by the Dominion Government, $26,115 by the provinces, and $8,500 by municipalities. The great difference in the amount paid by the Dominion Government over 1910-11, is accounted for by the payment of $4,994,416.31 paid to the Grand Trunk Pacific Ry., under the "implementing" clause of agreement guaranteeing its bond issue. These figures bring the amount paid in aid of railway construction by the Dominion Government to $154,075,235.09; by the provincial governments to $35,945,515.16, and by municipalities to $18,051,323.60. In addition land grants by the Dominion (discontinued since 1894) and the Provinces have aggregated 56,052,055 acres and bonds guaranteeing $245,070,045 of bonds have been given by the several governments as follows:—

Dominion	$91,083,553
Manitoba	20,889,660
Alberta	45,180,000
Saskatchewan	32,500,000
Ontario	7,860,000
Nova Scotia	[illegible]
British Columbia	38,046,832
New Brunswick	[illegible]
Quebec	[illegible]
Total	$245,070,045

An increase of $96,733,688, as compared with the amount outstanding June 30, 1911.

The earnings from all sources aggregated $219,403,753, an increase of $30,670,259, or 16.2% in the year, the source of revenue being as follows:—

	1910-11.	1911-12.
Passengers	$50,566,894	$56,543,664
Mails	1,869,414	1,914,720
Express	4,674,135	[illegible]
Baggage, parlor cars, etc.	1,207,555	1,295,415
Freight	126,570,534	149,961,140
Station and train privileges	826,252	1,086,687
Telegraphs, rents, etc.	3,018,710	3,307,739
Total	$188,733,494	$219,403,753

The operating expenses were $150,736,540, or 68.7% of the gross income. The total increase in operating expenses was $19,691,494 in the year, the distribution of the same, with the comparative figures for 1910-11, being:—

	1910-11	1911-12
Way and structures.	$29,246,093	$31,514,098
Equipment	26,127,638	29,811,510
Traffic expenses	4,831,744	5,293,700
Transportation	66,343,269	78,969,544
General expenses	4,487,039	5,137,688
Total	$131,034,784	$150,726,540

The railways carried 41,124,181 passengers and 89,444,331 tons of freight, an increase of 4,026,463 passengers and 9,560,049 tons of freight over 1910-11. The following tables give general statistics regarding traffic:—

Passenger Traffic	1910-11.	1911-12
Number of passengers	37,097,718	41,124,181
Passengers carried one mile	2,605,968,924	2,910,251,636
Passengers one mile per mile of line	102,597	108,888
Passengers per mile of line	1,460	1,539
Average passenger journey (miles)	70	71
Average number of passengers per train	60	62
Passenger train mileage	36,985,911	40,440,393
Mixed train mileage	6,277,468	6,473,882
Earnings from ticket sales	$50,566,894	$56,543,664
Earnings from passenger service	$58,317,998	$65,048,187
Average receipts per passenger	$1.360	$1.375
Average receipts per passenger per mile (cents)	1.944	1.943

Freight Traffic	1910-11.	1911-12.
Tons hauled	79,884,282	89,444,331
Tons hauled one mile	16,048,478,295	19,558,190,527
Tons hauled one mile per mile of line	631,829	731,776
Average haul, miles	200	218
Freight train mileage	52,498,866	60,126,023
Mixed train mileage	6,277,468	6,473,882
Revenue from freight	$124,743,015	$148,030,269
Average tons per train	305	325
Average cars per train	18.03	18.19
Average tons per car	16.91	17.87
Average receipts per ton per mile (cents)	777	757

The freight tonnage was divided by classes as follows:—

	1910-11	1911-12
Products of agriculture	13,809,536	17,300,945
Products of animals	3,190,702	3,159,280
Products of mines	28,652,236	31,467,799
Products of forest	13,238,347	14,152,721
Manufactures	13,573,987	16,241,081
Merchandise	2,138,089	2,711,963
Miscellaneous	4,981,385	4,410,542
Total	Tons 79,884,282	89,444,331

Further details of earnings and operating expenses are as follows:—

	1910-11.	1911-12.
Gross earnings	$188,733,494	$219,726,540
Net earnings	57,698,709	68,677,213
Gross earnings per mile	7,430.45	8,209.94
Net earnings per mile	2,271.60	2,569.58
Earnings per passenger	1.360	1.375
Earnings per ton	1.561	1.655
Earnings per passenger train mile	1.348	1.390
Earnings per freight train mile	2.376	2.494
Earnings per train mile, all trains	2.103	2.174
Operating expenses	131,034,785	150,726,540
Operating expenses per mile	5,158.85	5,639.48
Cost of running trains per mile	1.460	1.493

TRAIN MILEAGE.

	1910-11.	1911-12.
Passenger trains	36,985,911	40,440,393
Freight trains	52,498,866	60,126,023
Mixed trains	6,277,468	6,473,882
Special trains	[illegible]	[illegible]
Total	[illegible]	[illegible]

FREIGHT CAR MILEAGE.

	1910-11.	1911-12.
Loaded freight cars	[illegible]	[illegible]
Empty freight cars.	311,084,866	310,974,528
Caboose cars	[illegible]	[illegible]
Total	[illegible]	[illegible]

There were 4,484 locomotives, 4,946 passenger cars, 140,918 freight cars, and 10,466 company service cars in the service of the several companies, against 4,219 locomotives, 4,513 passenger cars, 127,158 freight cars, and 9,579 company service cars on June 30, 1911. In addition 181 locomotives and 7,593 cars were reported as being leased at June 30, 1912, and fast freight lines had 265 cars in service

LOCOMOTIVE MILEAGE.

Freight	[illegible]
Passenger	[illegible]
Mixed	[illegible]
Switching	[illegible]
Special	411,924
Total	127,401,480

The locomotives consumed 7,783,736 tons of fuel, chiefly coal, at a cost of $24,160,823. The use of oil as a fuel is reported for the first time officially, 1,729,577 gallons being used during the year.

The returns of accidents show that 568 persons were killed and 3,780 injured, an increase of 73 in the number killed and of 451 in the number injured, as compared with 1910-11. There were 545 persons killed and 2,437 injured by the movement of trains, distributed as follows:—

	Killed.	Injured.
Passengers	[illegible]	[illegible]
Employes	215	1,606
Trespassers	[illegible]	193
Non trespassers	[illegible]	[illegible]
Postal clerks and others	[illegible]	[illegible]
Total	545	2,437

One passenger in every 872,855 was killed, and one in every 84,792 was injured, as compared with onein every 1,324,919 killed and one in every 124,487 injured in 1910-11.

The number of railway employes on June 30, 1912, was 155,901, against 141,224 on June 30, 1911, and the aggregate salaries and fages was $87,299,639, an increase of $6,937,984.

Fifteen million ties, costing $6,700,000, were used during the year; the amount paid in taxes increased from $1,792,390 to $2,200,529, and 3,544 miles of line were operated by telephone, an increase of 238 miles over that so operated in 1910-11.

Speed of Locomotives Running Tender First.—The Board of Railway Commissioners has issued a circular stating that it has been impressed with the number of injuries to enginemen (in some cases fatal), apparently due to locomotives being run tender first at excessive rates of speed; and it directs that steam railways issue instructions requiring that locomotives running tender first, other than suburban tank engines equipped with pilot on tender, shall not exceed a speed of 20 miles an hour, and that a copy of such instructions be filed with the Board.

By means of moving pictures, colored so as to be as realistic as possible, the Union Pacific Rd. is carrying on a campaign among its locomotive drivers and firemen. The fire, in its different stages, is depicted on a screen in a car equipped for the service, and so successful has the project proved that a marked decrease in the amount of coal consumed and the density of smoke given off by the locomotives has been noticed at the points where the illustrated lectures have been given.

Reorganization of the Government Railways Management.

As already announced in Canadian Railway and Marine World, some changes have recently been made in the organization of the Dominion Government railways management, particularly in regard to the abolition of the position of Chief Engineer, the placing of all engineering matters under the Engineer of Maintenance, subject to the direction of the General Superintendent, and the placing of the maintenance of way under the superintendents. The reorganization was effected under an order in council, which provides as follows:—

THE GENERAL SUPERINTENDENT, under the direction of the Managing Board, shall have charge of all property of the Intercolonial and Prince Edward Island Railways. He will be responsible for the economical and proper maintenance and repairs of all rolling stock, machinery and equipment at shops and repair yards, for the condition of roadbed, track, bridges and other structures, and for the proper and economical maintenance, repairs and renewals of the same. He will have charge of and be responsible for the safety and efficiency of transportation service, and for the economical operation thereof; for the execution of all expenditures made on account of revenue, together with such works on account of capital as the department may from time to time place under his direction; for the cost of forces and for the quantity of material and supplies used on the work under his charge, and will perform such other duties as the Board may direct. In case of accident upon any of the lines under his charge, he shall immediately report the facts to the Managing Board, and, as soon as possible, institute a thorough investigation into the causes which led to it, and communicate in writing the result, together with his views and action upon the case, to the Managing Board. He shall keep the Managing Board fully advised of all occurrences and transactions of importance connected with his department.

THE ENGINEER OF MAINTENANCE will, under the direction of the General Superintendent, have general supervision of all engineering and maintenance of way matters. He will issue, when approved by the General Superintendent, standard plans and specifications and rules and regulations for maintenance, repairs and renewal of bridges, buildings, roadbed and track, signals and other structures, and will see that standard plans and rules are carried out. He will prepare all plans and specifications as directed. He will compile and maintain all necessary records and statistics bearing on the physical condition of the railway, other than rolling stock and machinery. He will furnish superintendents and resident engineers with copies of standard approved plans and rules and regulations. He will supervise the preparation of all rail charts, bridge load charts, standard and special bridge plans, masonry and steel work, together with specifications for the same. He will arrange for proper inspection of all new steel bridge installations, and make special and periodical inspection of existing bridges, trestles and culverts, and will compile and maintain all necessary records and statistics in connection with the same, and perform such other duties as may be assigned him by the General Superintendent.

SUPERINTENDENTS will report to and receive instructions from the General Superintendent. They will have charge of all property on, and be responsible for the operation and maintenance of, their respective divisions. They will consult the Engineer of Maintenance on all maintenance and engineering matters, and with the Superintendent of Motive Power on car and mechanical matters. They will approve all maintenance of way and engineering vouchers and pay rolls for their respective divisions, mark distribution voucher for the Auditor of Disbursements, and perform such other duties as the General Superintendent may direct.

RESIDENT ENGINEERS will report to the superintendents on general matters and to the Engineer of Maintenance on engineering and technical matters. They will prepare all necessary plans, specifications and estimates in connection with repairs, renewals and additions; will report to the Engineer of Maintenance any departure from standard and approved plans as to roadbed and track, and to the superintendents on all other matters; will make semi-annual inspections and send reports on same as above; will perform all engineering work on their respective divisions, compile and maintain complete records of the physical condition of the division and perform such other duties as may be assigned by the superintendents and Engineer of Maintenance.

ROADMASTERS will report to their respective superintendents.

THE SUPERINTENDENT OF MOTIVE power will, under the direction of the General Superintendent, have supervision of all matters pertaining to the construction, operation and maintenance of locomotives, cars, machinery, floating equipment, shops and roundhouses; will issue, when approved by the General Superintendent, standard plans and specifications and rules and regulations covering their construction, maintenance and repair, and will keep a record of all equipment and its condition, and perform such other duties as may be assigned by the General Superintendent.

THE RIGHT OF WAY AND LEASE agent will supervise the preparation of correct station, right of way and property plans; will supervise the preparation of leases, deeds, etc., and keep complete records of the same, and perform such other duties as may be assigned him by the General Superintendent.

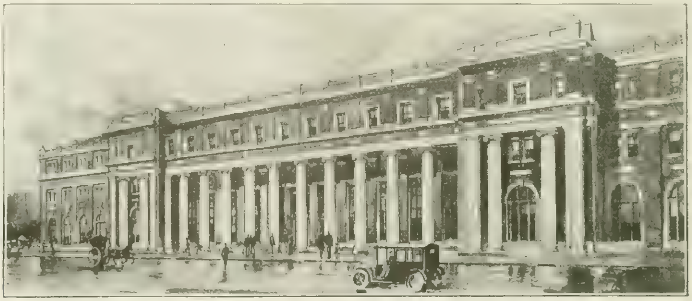
A General Passenger Agent's Appreciation.—W. P. Hinton, General Passenger Agent, Grand Trunk Pacific Ry., Winnipeg, in remitting his renewal subscription, writes: "I congratulate you on the continued growth of Canadian Railway and Marine World and the valuable matter contained therein. It is absolutely essential to Canadian railway men."

Electric Traction on 450 miles of main line track of the Chicago, Milwaukee and Puget Sound bed between Harlowtown, Mont., and Avery, Idaho, is contemplated.

The Canadian Pacific Railway's New Station at Vancouver.

A full description of the new passenger terminal and office facilities, which are under construction at Vancouver, was published in Canadian Railway and Marine World for July, 1912, and a ground plan was given in the issue for Aug., 1912. The accompanying illustration, shows the Cordova St. elevation of the new station, which is being built immediately adjoining the old site at the lower end of Granville St. The building, which is of classic type, was designed by Barott, Blackader and Webster, of Montreal.

The new building, which will be four stories high and extend 400 ft. on Cordova St., will be of an imposing character. The exterior will be of brick and limestone with a granite base. In the designing of this new terminal the comfort of the passengers has been considered from every point and it will be a most up to date terminal. The main waiting room will be 54 ft. 10 in. by 210½ ft. with an Ionic pilaster treatment and a coffered ceiling. The sub waiting and lunch rooms will be of simple design, in harmony with the main waiting room. The upper floors are to be arranged as offices for the operating and other local staffs. The present building on Granville St. will remain until the completion of the new station.



The C.P.R.'s New Station at Vancouver.

Work has already started and the excavation and foundations are well under way. The contractors, Westinghouse, Church, Kerr and Co., are rushing the work with the greatest speed possible. The new terminals will cost nearly $1,250,000, in addition to which some $2,000,000 are being spent on the enlargement of the Hotel Vancouver.

Eight Large Wireless Telegraph Stations are to be built by the Marconi Wireless Telegraph Co. of America, according to a recent announcement. Half of these will be sending and half receiving stations; they will be in working pairs, but with sending and receiving units placed 30 miles apart to prevent interference. One pair is to be at Oahu, Hawaii, one at Tamales Bay and Bolinas, Calif., and the third near Belmar, N.J. The fourth will be in Eastern Massachusetts. It is reported that these stations will permit transmission of messages across the Pacific Ocean, and increase the capacity of the present service between New York and London. The range is designed to be from 4,000 to 6,000 miles. The towers will be 400 to 450 ft. high, it is reported, there being 12 at each station, arranged in a semicircle to support the antennæ.

The best remedy for the protection of steel or ingot iron against failure by pitting, is the removal of the mill scale.

White Pass and Yukon Railway Co's. Annual Report, Etc.

Following are extracts from the directors' report for the year ended June 30, 1912, presented at the annual meeting in London, Eng., recently. The accounts include the results of the operations of the local companies, all of whose capital is owned by the W.P. and Y.R. Co., for their financial year, which ended Dec. 31, 1911:—

The profit and loss account, after providing for interest on debenture stock and debentures and all charges, shows a net profit for the year of £25,840 19s. 9d. Adding to this £9,249 8s. 5d. carried forward from the preceding year, there is a balance at credit of profit and loss of £35,090 8s. 2d. Out of this the full sinking fund instalment of £16,586 for the 5% consolidated debenture stock, and the instalment of £2,156 3s. 10d. for the sinking fund for the branch line bonds due in 1912 have been provided by the purchase of £18,742 of 5% consolidated debenture stock at a cost of £17,965 17s. 10d. The directors recommend that a dividend of 2s. per share be declared, payable Jan. 15, 1913, making 1% for the year. This will absorb £13,750, and there will remain £3,374 6s. 6d. to be carried forward to 1913.

The directors are glad to report that in March last the Canadian Board of Railway Commissioners rescinded the order to reduce the rates charged on the White Pass and Yukon Route, to which reference was made in the report last year.

Folowing is the profit and loss account:—

	£	s.	d.
Interest on securities of local companies paid and accrued to date.	52,944	9	0
Dividends on shares of local companies to Dec. 31, 1911	34,142	4	4
Transfer fees, etc.	44	10	0
	£87,131	3	4

	£	s.	d.
Interest on 5% consolidated first mortgage debenture stock	37,335	2	0
Interest on 6% mortgage debentures (navigation bonds)	15,330	0	0
Directors' and trustees' fees	2,210	0	0
Management and London charges	2,798	3	3
Legal expenses and stamps	1,502	19	3
Audit fee to June 30, 1911	78	15	0
Income tax	1,543	19	10
Loss in exchange	491	4	3
Profit carried to balance sheet	25,840	19	9
	£87,131	3	4

Following are extracts from the report of the President of the local companies, O. L. Dickeson:—

RAIL DIVISION.—On this division we carried 10,441 passengers and 20,028 tons of revenue freight. The average haul was 71.93 miles per passenger, and 98.63 per ton of freight, and the average load per car was 9.15 tons. All necessary maintenance and general repair work for safe and efficient operation and general upkeep of the property was done. The south 192 ft. of bridge 5C was filled, 6,090 cubic yards of material being used to complete this work. 434 cubuc yards of material was used to fill the station grounds surrounding the Broadway station in Skagway to facilitate the handling of mail and baggage and to afford adequate space for the handling of passengers. Ballasting was done between White Pass and White Horse with gravel hauled from pits at Watson and mile post 102. On section 1 considerable ballast work was also carried on to lessen the expense of the permanent upkeep. 7,942 new ties were laid in main line track, using the supply of ties on hand, which had been transported from the Puget Sound territory, to replace a considerable number of ties of native timber placed in the roadway during the construction days. This replacement of ties demonstrated conclusively that the life of native timber ties was at least 13 years without having gone through the modern process of creosoting to prolong their usefulness, and serves to illustrate that our expenses in the future in this direction may be materially decreased. A new drill grinder was installed at Skagway shops. The necessary general repairs to rolling stock were made, placing the equipment in first-class condition. The operating expenses of the division show a decrease of $67,127.70 compared with 1910.

The portion of the President's report dealing with the River division appears in the Marine Department of this issue on another page.

THE WINTER SERVICE for mail, passengers, parcels, etc., was carried on without unusual interruption by means of horse sleighs and four and six horse coaches, and a few trips completed by canoe and launch, which made 145 trips during 1911, equivalent to 47,850 miles, carrying 79,555 lbs. of mail, 543 passengers, 18,637 lbs. of parcels and 381,386 lbs. of ordinary freight. A saving of $1,514.71 in operating expenses was effected as compared with 1910. During the year some experimental work has been carried on in an effort to operate a portion of the trail with gasoline equipment with considerable success, and it is confidently expected that we will make further progress in this direction during the coming year.

GENERAL REMARKS. About June 1 a complete reorganization of the company's local operating forces was undertaken on the Rail and River divisions and Mail Service department, and the most modern methods of efficiency in operation were applied in each department, bringing about a general consolidation of offices and work in various positions, with the result that by the end of the year this had resulted in the saving of $146,637.13 in the operation of the three divisions, without in any way impairing the efficiency of the service or interfering with the general upkeep of the property. It may be encouraging to know in advance that the reorganization thus made will be permanent and throughout the ensuing year will show further decreases.

The history of every mining country has been that a large number of prospectors came into the country seeking bonanzas, and when once their claims were developed they were usually consolidated and absorbed by larger companies to be operated by machinery, displacing men. Following this there are usually found a number of unsuccessful and somewhat visionary schemes of promotion, which have a tendency to retard capital into legitimate mining enterprise. The Yukon Territory has been no exception to these conditions, which have also had a tendency to decrease traffic. The country, however, is highly mineralized, and gold, silver, copper, lead, magnesite, coal and other minerals are to be found throughout the region contiguous to our transportation system, and there remain today splendid opportunities for legitimate investments in mining enterprise when conducted with efficient modern business methods. In the interest of creating traffic for the railway the company will undertake to conduct a detailed and intelligent investigation of the known natural resources with a view of interesting new industry in the country. With the progress of the investigation it is confidently believed that the result of these efforts will be eventually reflected in the railway earnings.

Alaska and Yukon Territory, as summer tourist resorts, have few equals, and as this becomes generally known increased earnings will accrue from this source. The company is taking steps to secure additional tourist traffic.

PRESIDENT'S ADDRESS.—Mr. Dickeson, in speaking at the annual meeting, said:—Beginning with June, 1911, which was the time I first reached the company's property, a complete reorganization of the methods of operating was undertaken in practically every department, eliminating work that was considered unnecessary and consolidating offices and various positions in individual offices, with the result that within three weeks from the time this reorganization work started we were able with equal efficiency to conduct the company's affairs and look after the interests of the public in respect of prompt and reasonable service with 291 fewer employes on the pay rolls than during the corresponding period of the previous year. Within 15 months from the time this reorganization work began a saving of $229,000 had been made in the operating expenes. This was effected without interfering with the standard of wages paid. On the contrary, when the work of one position was eliminated entirely the duties of the position were added to the duties of another employe. In many such instances the wages of the employe were increased, with the result that those remaining in the service were better satisfied with the conditions of employment. While the main work of the reorganization has been effected, and it will not be possible during the ensuing year again to show so large a comparative decrease in the operating expenses, it would be idle to say that we had reached the limit of economies, for improvements in the operation of the property are still going on, and I am quite willing to assume the responsibility of saying that, with the new methods employed, the operating expenses will be very materially less than in previous years without impairing the general upkeep of the property or the efficiency of the service. For many reasons, quite beyond control, the company's traffic during 1911 was considerably less than in any previous year, but regardless of this I felt fully justified last year in telling you that I was able to take a hopefully confident view of the future, and now, after another season's experience, I am pleased indeed to say that the views then expressed have been confirmed. We shall be able to show that during 1912 there has been an increase in both freight and passenger traffic, and a very material increase in the net earnings as compared with 1911. Our net increase over and above everything—operating expenses and everything but depreciation—is $96,000 down to October 31. Looking forward to 1913 I think I am justified in saying that there is every indication of a further gradual increase in the traffic. I feel that we are warranted in this prediction owing to the development work started this year and the constantly increasing interest in the country as a tourist resort.

Railway Lands Patented.—Letters patent were issued during January in respect of Dominion railway lands in Manitoba, Saskatchewan, Alberta and British Columbia as follows:

	Acres
Calgary and Edmonton Ry.	[illegible]
Canadian Northern Ry	[illegible]
Canadian Pacific Ry	[illegible]
Qu'Appelle, Long Lake and Saskatchewan Rd. and Steamboat Co.	3,359.00
Total	[illegible]

A General Storekeeper's Approval.—N. P. Tracy, General Storekeeper, Canadian Northern Quebec Ry. and Quebec and Lake St. John Ry., Limoilou, Que., writes: "I find Canadian Railway and Marine World exceedingly interesting and instructive."

Telegraph Statistics of the Dominion.

The first report of statistics of the telegraph companies operating throughout the Dominion has been issued for the year ended June 30, 1912, by the Department of Railways and Canals, having been compiled under the direction of the Comptroller of Statistics, J. L. Payne. They are provided for by an amendment to the Railway Act, passed in 1911, and relate entirely to companies engaged in commercial telegraph business, and have no reference to railway telegraph interests, that is, that companies conducting both railway and commercial telegraph business, report only as to commercial business.

The Comptroller says that in preparing schedules for companies to report on it was necessary to create bases, and the question of uniformity did not arise, as it is not known that any other country has in force a comprehensive scheme of telegraph statistics. The schedule may be elaborated later, but for primary purposes it was arranged to cover information relating to:—Organization, capitalization, cost of property and equipment, revenue from operation, operating expenses, balance sheet, pole mileage, [illegible]

Reports were received from 14 companies out of 15 doing business in the Dominion. These have been divided into cable companies, land telegraph companies and cable and land telegraph companies combined. The firstnamed comprise:—Anglo-American Telegraph Co., American Telegraph and Cable Co., Commercial Cable Co., Direct United States Cable Co., Halifax and Bermudas Cable Co., Pacific Cable Board; while those operating on land comprise:—Anglo-American Telegraph Co., Canadian Northern Telegraph Co., C.P.R. Telegraphs, Dominion Government Telegraphs, G.T. Pacific Telegraph Co., Great North Western Telegraph Co., North American Telegraph Co., Timiskaming and Northern Ontario Ry. Commission, and Western Union Telegraph Co.

The Anglo-American Telegraph Co. provides land and cable service, while the Marconi Wireless Telegraph Co. occupies a unique field, and cannot be classified with other telegraph organizations.

[illegible] Western Union, C.P.R. and the Anglo-American companies, though the last-named lines are leased and operated by the first named; the Dominion Government operates lines in the unsettled portions of the Lower [illegible] Ontario and Quebec are served by the Great North Western, C.P.R., T. & N.O.R., and the North American companies, and the Western Provinces by C.P.R., G.N.W., G.T. Pacific, Canadian Northern, and the Dominion Government.

no capital liability is attached to the C.P.R., T. & N.O.R. and the Dominion Government service.

The cost of real property and equipment is given as $184,149,677, of which a large percentage refers to foreign corporations. The revenue from operation was $5,216,170.92, this referring wholly and definitely to Canadian business, with the qualification, so far as the Western Union Co. is concerned, that it was not possible to give exact information, an arbitrary assignment of income and outgo being made for the Canadian end of the business. In doing this there is cause for the inference that too low an apportionment was made for [illegible] the immense volume of business which passed through the offices of the three cable companies in Canada, which are operated by the Western Union. Operating expenses are reported as $3,379,336.96. It was not practicable to assign wire mileage to cable lines, but with respect to land lines, a mileage of 168,017.23 was reported, being divided as follows:—galvanized, 116,974 miles; copper, overhead, 50,100 miles; copper, underground, 254 miles; copper, submarine, 689 miles. There were also reported, 36,218 miles of wire, chiefly copper, as being devoted to multiple operation, that is, the duplex and quadruplex systems, but it is not quite clear that such mileage is actually over and above the figures of the pole mileage and wire mileage according to provinces, as given below:

	Pole mileage	Wire mileage
Nova Scotia	[illegible]	[illegible]
New Brunswick	[illegible]	[illegible]
Prince Edward Island	[illegible]	[illegible]
Quebec	[illegible]	[illegible]
Ontario	[illegible]	[illegible]
Manitoba	[illegible]	[illegible]
Saskatchewan	[illegible]	[illegible]
Alberta	[illegible]	[illegible]
British Columbia	[illegible]	[illegible]
Yukon	[illegible]	[illegible]
Totals	[illegible]	[illegible]

The discrepancy of 78 miles between the wire mileage in the table, and the figures preceding, arose from the impracticability of classifying that number of miles of cable in two of the reports. The reason for the low figures assigned to Prince Edward Island is that the land lines there are almost wholly owned and operated by the Anglo-American Cable Co., and cable companies [illegible]

There were transmitted by the companies operating in the Dominion, during the year, 9,252,540 land messages, and 768,559 cablegrams. The business of cable companies, as distinct from land companies, is reckoned [illegible]. In so far as the facts are not revealed in the [illegible] been handled by the land companies, it was not found practicable for the purposes of the first report to ascertain the number of words transmitted through the cables which have termini in Canada. Much of that business has no reference to Canada, merely forming a link with Great Britain. The Pacific Cable Board, however, reported [illegible] words as compared with 1,849,613 words in the preceding year.

There were 4,828 persons employed, and of these 2,579 were classified as operators, of whom 2,413 were males and 166 females. The salaries and wages paid during the year were $2,703,032.09, equal to 76.7 of the total operating expenses.

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]				
[illegible]	[illegible]					
[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]
[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]				
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		
[illegible]	[illegible]		[illegible]	[illegible]		
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]		[illegible]	[illegible]		
[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

[illegible]

Canadian Pacific and Canadian Northern Railway Terminals in Victoria, B. C.

The Premier of British Columbia announced recently that an arrangement has been completed between his government, the C.P.R. and the C.N. Pacific Ry., for the erection of terminals, in Victoria. The site is to be the old Songhees Indian Reserve, which has recently been acquired from the Indian Department for public purposes. It is proposed to devote 102 acres for railway terminals, the C.P.R., through the Esquimalt and Nanaimo Ry., obtaining 34 acres, and the C.N. Ry., through the C.N. Pacific Ry., obtaining about a similar acreage, the balance being reserved for future extensions.

Owing to the different levels at which the two lines enter the city, it was found impossible to arrange for a union station, and it was equally impossible to arrange for joint freight terminals, hence the division of the available area. The passenger stations, however, will be under one roof; one station being on each side of the Johnson street extension. The C.P.R. station and platform will be on the street level, while the C.N.R. station will be about 26 ft. below the street level, with two entrances. In working out the final details, arrangements will be made under which other railway lines may obtain entrance to the station.

The C.P.R. yards will be located between the main Johnson St. extension through the middle of the Reserve and the Harbor front on the south, and the C.N.R. will be located north of the E. and N. Ry. tracks on the west side of the harbor. In connection with the laying out of the reserve the following works have been arranged for:—

An up to date traffic and rail bridge from Johnson Street to reserve, the street being extended to Victoria West, over which B.C. Electric Ry. tracks will run, giving a short cut to Esquimalt. Cost of bridge will be borne by the various interests. Point Ellice bridge approach to be raised to allow for passage of C.N. trains beneath. The two sections of C.N. P.R. will link up near junction of North Douglas street and Saanich road, and will be extended southward to the arm which it crosses at Selkirk water, Deadman's island being used in making the connection. The reserve will thus be entered at its northern boundary.

A strip of land on the reserve skirting the waterfront is being reserved by the Provincial Government for wharves, warehouses and industrial plants. It will be disposed of by lease only, and a railway will be built along it to serve the factories. These tracks and industrial site to be for common use of both companies. Another portion of the reserve has been assigned for use as a city park, and 20 acres are to be subdivided into lots and sold.

The Italian railway administration is to call for tenders to convert to electric traction the line from Monza to Lecco. In addition, orders have been placed for 58 electric locomotives, which will serve partly on this line and partly for the [illegible] line. The section from Monza to Milan will be subsequently electrified.

Orders by Board of Railway Commissioners.

Beginning with June, 1904, Canadian Railway and Marine World has published in each issue summaries of orders passed by the Board of Railway Commissioners, so that subscribers who have filed the paper have a continuous record of the Board's proceedings. No other paper has done this.

The dates given of orders, immediately following the numbers, are those on which the hearings took place, and not those on which the orders were issued. In many cases orders are not issued for a considerable time after the dates assigned to them.

18611. Jan. 31.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to build across 4 highways, Port Hope, Ont., mileage [illegible] to [illegible].

General Order [illegible]. Feb. 1.—Declaring that General Order 98 shall not be construed as a substitution for order 15819, but as in addition thereto; and C.P.R. is directed to comply with order 15819.

18612. Jan. 31.—Authorizing C.P.R. tc build spur to its Pontypool ballast pit, across road between cons. [illegible] and [illegible], Manvers tp., Ont.

18613. Feb. [illegible].—Ordering C.P.R. to move its yard at Herbert, Sask., from north to west side of crossing; passing and elevator track switches to be located west of and not less than 500 ft. from crossing; cattle pens, loading platform, Royal Elevator building and coal sheds be moved to west end of yard, etc., work be completed by June 1.

18614, 18615. Feb. [illegible].—Approving location Central Ry. of Canada's Montreal to Midland line, mileage 0 to 7 from Hawkesbury, Ont., and revised location from mileage 5 to 16, through Sault au Recolet, St. Martin Ste. Dorothee, and Ste. Rose parishes, Que.

18616, 18617. Jan. 30, Feb. 3.—Authorizing C.N. Ontario Ry. to build across public road between cons. 12 and 13, Chisholm tp., and to build bridge across Jackfish river, mileage 313.5 from Sudbury Jct.

18618. Feb. 3.—Authorizing C.P.R. to build bridge across Red river, on its Kildonan cutoff, near Winnipeg.

18619. Feb. 3.—Authorizing C.N. Ontario Ry. to build bridges across Goose river (first crossing), Sudbury district; and across Kabinakagami river, Algoma district.

18620. Feb. 3.—Approving location of Canadian Northern Ry. station at Briercrest, Sask.

18621. Feb. 3.—Approving Quebec, Montreal and Southern Ry. bylaw, authorizing N. J. Ferguson, General Freight and Passenger Agent, to issue special freight, competitive, and special passenger tariffs; and rescinding order 18584.

18622. Feb. 3.—Authorizing G.T. Pacific Ry. to build bridge across Fraser river, at mileage 468.4, east of Prince Rupert, B.C.

18623. Feb. 3.—Authorizing C.P.R. to build spur for A. Macdonald Co., Lethbridge, Alta.

18624. Feb. 3.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to build a temporary connection with C.N. Ontario Ry., in Pickering tp., at mileage 176.11, for 18 months from date.

18625. Feb. 3.—Authorizing C.P.R. to build spur for Columbia River Lumber Co., near Sicamous, B.C.

18626. Feb. 6.—Approving regulations governing opening and closing of pivotal span of railway bridge over Fraser river, at New Westminster, B.C., and rescinding order 18490.

18627. Jan. 31.—Amending order 18479, Jan. 10, to provide that G.T.R. be authorized to cross Beaune St., Stoney Point, Ont.

18628. Feb. 4.—Amending order 5407, to provide that signalmen required at crossing of G.T. Pacific Ry. and Canadian Northern Ry. (Goose Lake branch), west of Saskatoon, Sask., be appointed by G.T.P.R., the wages to be paid by C.N.R.

18629. Feb. 3.—Approving, pending Board's decision in enquiry into rates charged generally by railway companies in British Columbia, the B.C. Electric Ry. Standard Freight Tariff of Maximum Mileage Rates, C.R.C. 1, to apply between stations on its Vancouver and Lulu Island Ry., and its Vancouver, Fraser Valley and Southern Ry.

18630. Feb. 6.—Approving Niagara, St. Catharines & Toronto Ry. revised location in St. Catharines, Ont., from mileage 0.7 to 1.8.

18631. Feb. 6.—Extending to Mar. 1, time within which C.N.R. station at Fort Frances, Ont., be built.

18632. Feb. 6.—Extending to Apr. 5, time within which C.P.R. shall install electric bell at highway crossing at east end of its yard at Sharbot Lake, Ont.

18633. Feb. 7.—Authorizing C.P.R. to build its Hawarden to Floral branch across highway between secs 19 and 29-31-4, w. 3 m., at mileage 18.17, Sask.

18634. Feb. 3.—Approving revised location of C.P.R. station at Redford, Sask.

18635. Feb. 4.—Amending order 16752, by substituting Vancouver Power Co. for British Columbia Electric Ry.

18636. Feb. 4.—Authorizing G.T. Pacific Ry. to build bridge across Fifty-Mile river at mileage 221, from Wolf creek west, B.C.

18637. Feb. [illegible].—Authorizing G.T.R. to build siding for the Berlin Trunk and Bag Co., Berlin, Ont.

18638. Feb. 6.—Authorizing G.T. Pacific Branch Lines Co. to build bridge over Bow river, at mileage 198 on Tofield-Calgary branch, Alta.; and rescinding order 13889.

18639. Feb. 4.—Authorizing G.T. Pacific Ry. to build bridges over Bulkley river at mileage 258 and 263, east of Prince Rupert, B.C.

18640. Feb. 6.—Approving revised location G.T.P. Branch Lines Co.'s Regina-Boundary branch from east line of sec. 13-[illegible], w. 2 m., to international boundary, mileage 135.93 to 154.94, Cannington district, Sask.

18641. Feb. 4.—Authorizing G.T. Pacific Branch Lines Co. to build bridge across Assiniboine river at mileage 19.5, Brandon branch, Man.

18642. Feb. 8.—Authorizing G.T.R. to build siding for Barcher & Branberger, Bertie tp., Ont.

18643, 18644. Feb. 8.—Authorizing C.P.R. to build bridge 101.5 over Kanaka creek, and to build additional track across roadway at mileage 60.17, Cascade subdivision, B.C.

18645. Feb. 4.—Authorizing Algoma Central and Hudson Bay Ry. to build bridge over Chippewa river, mileage 69.25, Algoma district, Ont.

18646. Feb. 8.—Authorizing C.P.R. to build extension to Brandon Pressed Brick & Tile Co.'s spur, in Trafalgar tp., Ont.

18647. Feb. 8.—Authorizing G.T. Pacific Ry. to build spurs for Gainford Collieries, North Alberta district.

18648. Feb. 8.—Authorizing G.T.R. to build siding for Canadian Glass Manufacturing Co., Hamilton, Ont.

18649. Feb. 10.—Dismissing application of Murray tp., Ont., for order directing G.T.R. to provide subway at crossing between lots 12 and 13.

18650, 18651. Feb 6, 4.—Dismissing application of town of Arnprior, Ont., for orders directing G.T.R. to build crossing where its Canada Atlantic branch intersects Ida St.; and directing C.P.R. to build crossings where it intersects Hugh and Ida Sts.

18652. Feb. 4.—Approving, pending Board's decision in enquiry into rates charged generally by railway companies, in British Columbia, the B.C. Electric Ry. Standard Passenger Tariff of Maximum Mileage Tolls, C.R.C. 1, to apply between stations on Vancouver and Lulu Island Ry., and on Vancouver, Fraser Valley and Southern Ry.

18653. Feb. 6.—Authorizing G.T. Pacific Ry. to build bridge across Rau Shuswap river, at mileage 208, Wolf creek west, B.C.

18654. Feb. 6.—Authorizing G.T. Pacific Branch Lines Co. to build Y turning out from Biggar-Calgary branch at Loverna, Saskatoon district, Sask.

18655. Feb. 6.—Authorizing G.T. Pacific Ry. to build bridge across Goat river, mileage 243, from Wolf creek west, B.C.

18656. Feb. 11.—Authorizing C.P.R. to build bridge 10.4 on Farnham subdivision, Que.

18657. Feb. 10.—Authorizing C.P.R. to build two spurs for Pembroke Shook Mills, Pembroke tp., Ont.

18658. Feb. 6.—Authorizing C.P.R. to build spur for R. H. Smith, Etobicoke tp., Ont.

18659, 18660. Feb. 4.—Authorizing C.P.R. to build additional track across highways at mileages 57.4; and 61.5, Cascade subdivision, B.C.

18661. Feb. 10.—Approving Canadian Northern Ry. amended plan showing spur in s.e. sec. 9-15-22, w.p.m., Man.

18662. Feb. 10.—Authorizing G.T.R. to build siding and spur for Bonner Sand and Ballast, Durham tp., Que.

18663. Feb. 10.—Authorizing C.P.R. to build bridge 84.2, near Eady, in Medonte tp., Ont.

18664. Feb. 11.—Authorizing C.P.R. to build spur for Standard Paint Co. of Canada, Lachine parish, Que.

18665. Feb. 10.—Amending order 18351, re G.T.R. spur for Beardmore and Co., Acton, Ont.

18666. Feb. 4.—Relieving G.T.R. from providing further protection at crossing of second public highway, by its Port Rowan branch, ½ mile west of St. William, Ont.

18667. Feb. 10.—Rescinding order 18162, re divisions of highway in Saskatchewan by C.P.R.

18668. Feb. 12.—Approving location of Alberta Central Ry. Red Deer to Sounding Creek Line from Red Deer, to mileage 2 from Red Deer; and revised location from mileage 2 to mileage 10; and authorizing its building across 11 highways.

18669. Feb. 12.—Approving location C.P.R Gleichen to Shepard branch, from mileage 0 to 40; and authorizing its building across 42 highways.

18670, 18671. Feb. 11.—Amending order 17823, Oct. 22, 1912, re crossing of Dundas street, Whitby tp., Ont., by Campbellford, Lake Ontario and Western Ry. (C.P.R.) to provide for [illegible] 13 and 14, con. 1, Cramahe tp., Ont., at mileage [illegible] at grade.

18672. Feb. 12.—Approving plan showing clear[illegible] C.P.R. [illegible] Fort William, Ont.

18673. [illegible] Ontario and Western Ry. (C.P.R.) revised location from lot 6, con. 1, Tyendinaga tp., at mileage 68.5 to lot 30, con. 1, Thurlow tp., mileage 70.25; and authorizing crossing of G.T.R. by bridge in lot 3, con. 1, south of base line, Tyendinaga [illegible].

18674. Feb. 12.—Authorizing C.P.R., to rearrange spurs and to build additional spurs for Swift Canadian Co., Union Stock Yards, Toronto.

18675. Feb. 7.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to build across road allowance between lots 16 and 17, con. A, Haldimand tp., Ont., at mileage 110.41 from Glen Tay.

18676. Feb. 11.—Authorizing C.P.R., to build bridge 109.7 over Pitt river, Cascade subdivision, B.C.

18677. Feb. 11.—Ordering C.P.R. to install within 90 days an improved type of illuminated electric bell at La Croix St., Chatham, Ont.

18678. Feb. 12.—Authorizing G.T.R., to connect tracks of its Districts 2 and 4, and to cross Central Vermont Ry. at St. Lambert, Que.

18679. Feb. 10.—Authorizing Lachine, Jacques Cartier and Maisonneuve Ry. (G.T.R.) to divert certain lanes in Montreal.

18680. Feb. 11.—Approving, temporarily, G.T. Pacific Ry. Standard Freight Mileage Tariff, C.R.C. 14, to apply between stations in Alberta and British Columbia, between Thornton and Tete Jaune.

18681. Feb. 4.—Amending order 16029, permitting arbitrator to consider substitution of foot subway for overhead bridge at George St., Smiths Falls, Ont., and opening of certain streets.

18682. Feb. 14.—Ordering that transfer track between C.P.R. and Canadian Northern Ry. to be built by C.P.R., at Conquest, Sask., be completed by May 1.

18683. Feb. 13.—Approving Canadian Northern Ry. plan showing highway bridge proposed at MacLeod Trail, Calgary, Alta.

18684. Feb. 14.—Extending to May 31, time within which C.P.R. complete spur leading to its ballast pit near Olds, Alta.

18685. Feb. 13.—Authorizing G.T.R. to build siding, with spurs for J. Ransford, Tuckersmith tp., Ont.

18686. Feb. 12.—Authorizing G.T.R. to build, subject to consent of city of Toronto, additional track across John St., leading into its King Edward yard.

18687. Feb. 13.—Authorizing G.T.R., to renew bridge 6, over Queen St. West, Toronto, and reserving question of cost.

18688. Feb. 14.—Authorizing Massey-Harris Co. to build bridges over G.T.R. at Stafford St. and Wellington Ave., Toronto.

18689. Feb. 12.—Authorizing G.T. Pacific Ry. to build, subject to city's consent, spur for Alberta Agencies, Edmonton, Alta.

18690, 18691. Feb. 13.—Ordering G.T.R., to protect Greenwoods Ave., Toronto, and Hunter St., Peterboro, Ont., by gates operated both day and night.

18692. Feb. 13.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to build across highways at mileage 145.33, 145.52 and 145.69.

18693. Feb. 13.—Dismissing application J. Cowie, Cramahe tp., Ont.; Campbellford, Lake Ontario and Western Ry. (C.P.R.) to move house and barn to whatever points the Board's Engineer may indicate, work to be done before any arbitration proceedings are taken; and company to be at liberty to serve fresh notice of expropriation.

18694 to 18696. Feb. 13.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to build across road allowance between lots 10 and 11 and lots 20 and 21, broken front concession, Clarke tp., and divert road allowance in lot 34, con. 1, Camden tp.

18697, 18698. Feb. 13, 12.—Authorizing C.P.R., to build additional track across Overend St., and five additional tracks across Water St., between Tate and Front Sts., and ordering it to install gates, operated day and night by watchmen, at Bartlett Ave., Toronto.

18699. Feb. 13.—Authorizing C.P.R. to build spur for G. B. Ferguson & Co. at Six Mile Creek, B.C.

18700. Feb. 10.—Authorizing C.P.R., to build road diversion at mileage 19.7 from Kenmay, Estevan Subdivision, Manitoba Division, existing crossing to be closed.

18701. Feb. 13.—Authorizing G.T.R. to build sidings across the Clay Road to the Ontario Paper Co.'s premises, Thorold Tp., Ont.

18702, 18703. Feb. 13, 15.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to build across road allowance between lots 12 and 13, con. 1, Murray Tp., at mileage 90.75, and across Ontario St., Trenton, by a bridge, at mileage 87.86 from Glen Tay, Ont.

18704. Feb. 14.—Authorizing C.P.R. to build across highway in B.C. Government lot 280, New

[illegible]

[illegible] of C.N. [illegible]

[illegible] mileage 36, to lot 114. [illegible]

18794. Feb. 26.—Authorizing G.T.R. to lay additional 6 in. water main, 4 ft. below surface, from Lake Ontario to its terminals in New Toronto, across Lake Shore Road, under Toronto and York Radial Ry., along Sixth St., and across Toronto St., New Toronto, Ont.

18795. Feb. 28.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to build across road allowance between Lots 20 and 21, Con. 1, Whitby Tp., at mileage 161.7 from Glen Tay, Ont.

18796. Feb. 28.—Authorizing G.T.R. to build Currie Drain under its Air Line Division, in Ekfrid Tp., Ont.; work to be completed by June 30.

18797. Feb. 28.—Authorizing Michigan Central Rd. to connect with Essex Terminal Ry. on northerly side of M.C.R. Windsor Yard, Sandwich West Tp., Ont.

18798. Feb. 27.—Authorizing Esquimalt and Nanaimo Ry. to build siding for Red Wing Lumber Co., at mileage 1.35, Victoria, B.C.

18799, 18800. Feb. 28.—Authorizing C.P.R. to build two spurs for Wilson and Clarry, Calgary, Alta., and extension to siding for Andrews and Sons, Winnipeg.

18801. Mar. 1.—Authorizing C.P.R. to build, subject to consent of British Columbia Public Works Department, additional track across highway between Provincial Government Lots 405 and 407, Tp. 14, r. 2, e. c. m., mileage 99.8, Cascade Subdivision.

18802 to 18807. Feb. 28 to Mar. 3.—Authorizing C.P.R. to build spurs for Marshall-Mitchell Hardware Co., Medicine Hat, Alta.; Redcliffe Rolling Mills and Bolt Co., Redcliffe, Alta.; P. Berg, Camrose, Alta.; Diamond Flint Glass Co., Redcliffe, Alta.; F. L. Moorehouse, Calgary, Alta.; and Alberta Ice Co., Calgary, Alta.

18808. Mar. 3.—Authorizing C.N. Ontario Ry. to build across Sturgeon River, west crossing, Janes Tp., at mileage 280.3 from Ottawa.

18809. Mar. 1.—Authorizing C.N. Ontario Ry. to build main line and siding across Mill and Fourth Sts., Deseronto.

18810. Mar. 1.—Authorizing Southwold Tp., Ont., to build Saywell Drain under G.T.R.

18811. Mar. 1.—Ordering C.P.R. to accept and transmit trans-Atlantic wireless telegraph messages over its land lines connecting with Marconi Wireless Telegraph Co.'s trans-Atlantic duplex stations at Glace Bay and Louisburg, N.S.

18812. Mar. 1.—Authorizing C.P.R. to build spur for Sawyer-Massey Co., Regina, Sask.

18813. Mar. 3.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to build across Toronto Eastern Ry., at junction of Scugog and Wellington Sts., Bowmanville, Ont.

18814. Mar. 3.—Approving plan of Great Northern Ry. station at Salmo, B.C.

18815. Mar. 3.—Authorizing C.P.R. to build 400 ft. extension to spur for Riverside Lumber Co., Calgary, Alta.

18816. Mar. 1.—Approving change in location of C.P.R. station at Kelloe, Man.

18817. Mar. 3.—Relieving G.T.R. from providing further protection at crossing two miles west of St. Bazile, Que.

18818. Mar. 3.—Authorizing G.T. Pacific Ry. to build spur for Edmonton Gravel Co. in Secs. 16 and 21, Tp. 53, r. 23, w. 4 m., North Alberta District.

18819. Mar. 3.—Approving location of C.N. Ontario Ry. station grounds at Wasing, mileage 204.8 from Ottawa.

18820. Mar. 5. Authorizing C.P.R. to build additional track across roadway in Provincial Government Lot 476, G. 1, Tp. 17, r. 4, e. c. m., mileage 84.4 on Cascade Subdivision, B.C.

18821, 18822. Mar. 5.—Authorizing C.P.R. to build road allowance diversions between Sec. 16 and Sec. 9-10-15, Lethbridge Subdivision; and in s. w. ¼ Sec. 16-17-12, w. 4 m., Calgary Subdivision, Alberta Division, between mileage 50 and 51, and to close up roads so diverted within its right of way.

18823. Mar. 4.—Authorizing G.T. Pacific Branch Lines Co. to build highway between Secs. 12 and 13-1-3, w. 2 m., across Regina Boundary Branch, mileage 152.8, Cannington District, Sask.

18824. Mar. 4.—Ordering that cost of installation of gates at Lapiniere Road, between Greenfield Park and St. Lambert, Que., be paid,—20% out of railway grade crossing fund, 60% by G.T.R., and 20% by the three municipalities concerned, in equal proportions; and that cost of operation and maintenance be paid,—70% by G.T.R., and 30% by the municipalities in equal proportions.

18825. Mar. 5.—Dismissing applications for stop over privilege for completion of carload shipments in transit, at additional charge of $3 a car for each such stop; ordering railway companies to re-establish arrangement, whereby apples were carried to concentration points for storage, inspection, or completion of carloads and reshipment, subject to certain conditions, at reduction of 1-3 from local tariff rates, to concentration points, to become effective within 30 days from date; and ordering G.T.R., G.T.P.R., C. P.R., and C.N.R., to notify Board, not later than Apr. 15 what number of their, and each of their, refrigerator cars in service are supplied with slatted floors, and what number are not.

18826. Mar. 5.—Authorizing C.P.R. to build additional track across roadway between s. w. ¼ Sec. 25 and s. e. ¼ Sec. [illegible], e. c. m., at mileage 90.99, Cascade Subdivision, B.C.

18827. Feb. 25.—Authorizing Canadian Northern Ry. to build its Craven Northerly Branch across C.P.R. Kirkella-Lanigan Branch, s. w. ¼ Sec. 10-23-19, w. 2 m., Sask.

18828. Mar. 6.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to take certain lands for diversion of highway in Con. 7, Camden Tp., Ont.

18829. Mar. 5.—Approving location of Canadian Northern Ry. third-class station at Inwood, Man.

18830. Mar. 6.—Authorizing C.P.R. to build spur for J. D. Fisk and W. R. Marshall, Calgary, Alta.

18831. Mar. 7.—Rescinding order 15263, Nov. 2, 1911, authorizing Dominion Atlantic Ry. to rebuild bridge across Little Joggins River, N.S.

18832. Feb. 28.—Authorizing C.P.R. to build spur for Redcliff Pressed Brick Co., Redcliff, Alta.

18833. Mar. 8.—Amending order 18581, Jan. 24, re classification of paraffin wax, to provide for issue of separate supplement, be made effective not later than Mar. 24.

18834. Mar. 7.—Extending, for two months from March 11, the time within which City of Hamilton, Ont., be required to make excavation to northern limit of Toronto, Hamilton & Buffalo Ry. track; city to retain priority over T.H. & B. Ry. spur.

18835. Mar. 7.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to build across road allowance between Lots 16 and 17, Con. 1, Cramahe Tp., Ont., at mileage 101.22 from Glen Tay.

18836. Mar. 5.—Authorizing R. H. Edgar, Bowling Green, Ont., to place telephone wires across C.P.R. west of Orangeville, Ont.

18837. Mar. 12.—Authorizing G.T. Pacific Branch Lines Co. to operate trains on its Regina-Moose Jaw Branch, for construction purposes, across temporary undergrade crossing of C.P.R. Moose Jaw Northwesterly Branch, at Moose Jaw Sask.; provided it keeps men off tops and sides of cars.

18838. Mar. 13.—Ordering C.N. Ontario Ry. to build transfer track with G.T.R. in Port Hope, Ont.

18839. Mar. 13.—Authorizing C.N. Ontario Ry. to divert public road between lots 5 and 6, con. 11, Chisholm Tp.

18840. Mar. 11.—Authorizing Canadian Northern Ry. to build across public road between secs. 24 and 13-2-8, w. 2 m., Sask.

18841. Mar. 10.—Authorizing Canadian Northern Ry. and C.P.R. to operate over crossing near Forward, Sask., without first stopping trains.

18842. Mar. 13.—Authorizing Canadian Northern Ry. to build across C.P.R. Crowsnest Branch in Macleod, Alta.

18843. Mar. 11.—Authorizing C.P.R. to operate over G.T.R. crossing north of Woodstock, Ont., without first stopping trains.

18844. Mar. 12.—Authorizing C.P.R. to build extension to branch constructed for Sidney Brick and Tile Co., Sidney, Man.

18845. Mar. 11.—Authorizing C.P.R. to build additional track across highway at Maple Crescent, B.C.

18846. Mar. 7.—Authorizing C.P.R. to open for traffic portion of its second track between Hammond and Westminster Jct., B.C., 7.37 miles.

18847. Mar. 10.—Approving location of C.P.R. station at Wymark, Sask.

18848. Mar. 10.—Authorizing C.P.R. to use bridge 57.9, London Subdivision, Ont.

18849. Mar. 8.—Authorizing Campbellford Lake Ontario and Western Ry. (C.P.R.) to build temporary connection with Bay of Quinte Ry. at mileage 44.03 from Glen Tay to Lot 33, Con. 8, Camden Tp., Ont.

18850. Mar. 10.—Approving revised location of Campbellford, Lake Ontario and Western Ry. (C.P.R.) over lots 11 and 12, Broken Front Concession, Clark Tp., Ont.

18851. Mar. 12.—Approving clearance of canopy to be built over G.T.R. freight transfer platform at Windsor, Ont.; provided G.T.R. keeps men off sides of cars while passing through shed.

18852. Mar. 12.—Extending to June 1 time within which G.T.R. complete siding for Snelgrove and Teer, Beaverton, Ont.

18853. Mar. 8.—Authorizing G.T.R. to use bridge 161 over River Road, St. Lambert, Que.

18854. Mar. 12.—Approving plans and specifications of Saywell Drain, to be built under G.T.R. in Southwold Tp., Ont., and rescinding order 18810, Mar. 1.

18885. Mar. 13.—Amending order 18834, Mar. 7, re excavation by City of Hamilton, Ont., to the northerly limit of Toronto, Hamilton and Buffalo Ry.

18856. Mar. 6.—Approving, subject to terms Board may subsequently fix re property damage, revised location Canadian Northern Montreal Tunnel and Terminal Co.'s line from Cathcart St. to St. Antoine St., Montreal.

18857. Mar. 7.—Authorizing C.N. Ontario Ry. to take, for making connection with C.P.R., as provided by order 18218, Dec. 4, 1912, portions of W. Thompson's, M. McDonald's and R. Nelson's properties in Westmeath and Pembroke Tps.

18858. Mar. 12.—Ordering Canadian Northern Ry. to erect gates at Frederica and Edward Sts., Fort William, Ont., to be operated by day and night watchmen.

18859. Mar. 13.—Authorizing G.T.R. to take, for building tracks for locomotive house to be built at St. Lambert, certain lands in Longueuil Parish, Que.

18860. Mar. 13.—Approving, temporarily, G. T. Pacific Ry. Standard Freight Mileage Tariff, C.R.C. 15, including and cancelling C.R.C. 13, to apply between stations in British Columbia, Prince Rupert to Beament, inclusive.

18861. Mar. 13.—Authorizing Montreal Light, Heat and Power Co. to build overhead conveyor across C.P.R. Lachine Canal South Bank Branch, in Cote St. Paul, Montreal.

Canadian Northern Railway Earnings, Etc.

Gross earnings, working expenses, net earnings, increases, or decreases, compared with those for 1911-12, from July 1, 1912:—

	Gross Earnings	Expenses	Net Earnings	Increase
July	$1,829,700	$1 335,100	$494,600	$133,000
Aug.	1,745,800	1,375,000	270,800	56,100
Sept.	1,671,500	1,248,000	423,500	4,100
Oct.	2,351,200	1,645,900	705,300	24,009
Nov	2,509,700	1,631,900	877,800	212,600
Dec.	2,132,000	1,551,000	581,000	77,200
Jan.	1,513,400	1,243,200	270,200	46,500
	$13,753,300	$10,030,900	$3,723,200	$554,400
Incr	$2,190,500	$1,636,100	$554,400	

Mileage in operation during Jan., 4,297, against 3,981 in Jan., 1912.

Approximate gross earnings for Feb., 01,398,900, against $1,203,400 for Feb., 1912.

Canadian Pacific Railway Earnings, Etc.

Gross earnings, working expenses, net earnings, increases or decreases, compared with those for 1911-12, from July 1, 1912:—

	Gross Earnings	Expenses	Net Earnings	Increase
July	$12,052,398.58	$7,604,221.68	$4,448,176 90	$745,148.57
Aug	12,251,715.87	7,533,790 21	4,717,925 66	642,354.65
Sept.	11,579,733.98	7,329,430.13	4,250,303.85	332,857.05
Oct.	13,060,397.80	7,999,510 61	5,060,887.19	379,782.44
Nov	12,362,666.42	8,104,527.38	4,258,139.04	270,772.55
Dec.	12,219,278.72	7,823,559 21	4,395,719.51	289,989.25
Jan	9,679,607.39	8,017,233.61	1,662,373.78	579,516.08
	$83,205,798.76	$54,412,272.83	$28,793,525.93	$3,240,420.59
Inc	$13,310,650.96	$10,070,230.37	$3,240,420.59	

Approximate gross earnings for Feb., $9,526,000, against $8,743,000 for Feb., 1912.

Grand Trunk Railway Earnings, Etc.

The following figures show the earnings and expenses of the G.T.R., C.A.R., G.T. Western Ry. and D.G.H. & M.R. for Jan., 1913, as compared with those for Jan., 1912:—

Grand Trunk Railway.

	1913.	1912
Earnings	$3,095,800	$2,579,800
Expenses	2,695,700	2,276,600
Net earnings	$ 400,100	$ 303,200

Canada Atlantic Railway.

	1913.	1912.
Earnings	$ 176,700	$ 160,800
Expenses	186,400	160,600
Net earnings	$ 9,700*	$ 200

Grand Trunk Western Railway.

	1913	1912
Earnings	$ 589,700	$ 519,100
Expenses	544,600	477,900
Net earnings	$ 45,100	$ 41,200

Detrit, Grand Haven and Milwaukee Ry.

	1913.	1912.
Earnings	$ 185,900	$ 162,600
Expenses	213,200	190,600
Deficit	$ 27,300	$ 28,000

* Deficit.

Approximate gross earnings for Feb., $3,763,463, against $3,250,043 for Feb., 1912

TRAFFIC RECEIPTS OF THE SYSTEM

Aggregate from Jan. 1 to Feb. 28:—

	1913	1912	Increase
G.T.R.	$6,017,499	$5,089,647	$927,852
C A R	345,239	290,817	54 422
G T W R	1 108,295	996,813	111 482
D.G.H. & M.R.	346,027	310,530	35,497
Totals	$7,817,060	$6,686,807	$1 130 253

Grand Trunk Pacific Railway Earnings.

The earnings for February were $374,084, and the aggregate earnings for two months ended Feb. 28, were $751,928.

Railway Development

Projected Lines, Surveys, Construction, Betterments, Etc.

Alberta Interurban Ry.—The Dominion Parliament is being asked to pass an act validating the proceedings at the organization meeting of the company held April 16, 1912, confirming the appointment of the directors, and validating their subsequent acts. (Feb., pg. 83.)

Algoma Central and Hudson Bay Ry.—The Board of Railway Commissioners has authorized the opening for traffic of the main line extension from West St. to Bruce St., Sault Ste. Marie, Ont., 7,000 ft. (Jan., pg. 20.)

Bow City to Cassells, Alta.—Press reports state that a line of about 15 miles is to be built this year from Bow City to Cassells, Alta., on the C.P.R. It would give on outlet for the coal mined in the Bow City district to the railway. H. N. Dunning, New York, and C. R. Henderson, Regina, Sask., are interested. (Sec. Bow River Ry.)

Bow River Collieries Ry.—The Alberta Legislature has granted an extension of time for the building of the lines authorized by chap. 28 of the statutes of 1908. Parlee, Freeman and Abbott, Edmonton, Alta., are solicitors for the applicants. (May, 1908, pg. 329.)

Bruce Mines and Algoma Ry.—Application is being made to the Ontario Legislature to change the name of the Lake Huron and Northern Ontario Ry. Co. and to authorize the increase of its capital stock from $300,000 to $12,000,000. Young and McEvoy, Toronto, are solicitors for applicants. (Aug. 1912, pg. 411.)

The Brule Lake Ry. Co. has been incorporated by the Alberta Legislature to build a railway from the G.T. Pacific Ry. east of Brule Lake, at mileage 994, southeasterly to tp. 49, range 26, west of the 5th meridian. The provisional directors are:—G. G. S. Lindsay, K.C., Toronto; S. R. Woods, K.C., O. M. Biggar, S. W. Field, J. T. J. Collison, Edmonton, Alta.

Burrard Inlet Tunnel and Bridge Co.—The various difficulties which have cropped up in connection with the projected bridge over the second narrows of Burrard Inlet, Vancouver, are being got rid of, and the directors state that construction will be started on the substructure within the next few months. The Provincial Legislature has provided $400,000 towards the cost of the bridge, and arrangements are being made for its use by the Pacific Great Eastern Ry. The company has offered the C. P. R. its right of way from the bridge to Deep Cove, under certain conditions. The Dominion Parliament has granted an extension of time for construction. (Jan., pg. 20.)

Calgary, Edmonton and Fort McMurray Ry.—The provisional directors named in the application to Parliament for an act of incorporation are:—D. McGibbons, Jas. Ross, A. Violette, C. A. Violette, Edmonton, Alta., and T. J. S. Skinner, Calgary, Alta. (Jan., pg. 20.)

Canada and Gulf Terminal Ry.—Surveys for the extension of the line from Montreal to Gaspe Basin, Que., 223 miles, are being made. A preliminary survey of the whole distance has been completed, and a final survey for part of the line is being made. L. E. Rowley, Chief Engineer, did the first part of the work, and C. G. Holloway, acting Chief Engineer, is now in charge. Nothing definite has been arranged [illegible] Nov., 1912, pg. 557.

Canadian Terminal Ry.—The New Brunswick Legislature is being asked to consider a proposition to guarantee the company's bonds for $25,000 a mile for a 65 mile railway from Fredericton to St. Stephen and L'Etang, N.B. G. W. Ganong, St. Stephen, N.B.; J. S. Clarke, St. George, N.B., and L. A. Marsh, Toronto, are interested. (June, 1912, pg. 299.)

Canadian Northwestern Ry.—Application is being made to the Dominion Parliament to incorporate a company with this title to build a railway from Lethbridge, Alta., northeasterly to Winnipeg, thence passing Dominion City, Manitou, Brandon and Grand View to Pas, Man., and a line from Lethbridge northeasterly via North Battleford and Prince Albert to Pas. Brosseau, Brosseau, Tansly and Angers, Ottawa, are solicitors for applicants.

Central Canada Ry.—The Alberta Legislature has incorporated a company with this title to build a railway from tp. 74 or 75, range 18 or 19, west of the 5th meridian to Peace River Landing, thence to tp. 81, range 4, west of the 6th meridian, with a branch from Peace River Landing northerly to the Battle River near tp. 94, range 22, west of the 5th meridian. The provisional directors are:—J. D. McArthur, Winnipeg; A. C. Galbraith, S. B. Woods, K.C., J. T. J. Collinson, Edmonton.

Central Ontario Ry.—We are officially advised that it has not yet been definitely decided that the proposed spur line of 1.5 miles from Marmora to the Deloro Mines, Ont., will be built this year. If it is built, as is probable, the work will be done by the C.O. Ry. staff. G. Collins, Trenton, Ont., is general manager. (Feb., 1911, pg. 141.)

Central Ry. of Canada.—The Railways Committee of the House of Commons by a vote of 19 to 8 threw out the company's bill for an extension of time for construction and other amendments to its charter.

The Board of Railway Commissioners has approved of location plans of this line between mileage 0 and 7, and revised location plans from mileage 5 to 16, in Quebec.

A contract has been entered into between the company and the Dominion Government for the building of a line from Ste. Agathe des Montes, passing near Lake St. Joseph and Ste. Marie, to Howard tp., Que., 15 miles. (Jan., pg. 20.)

A special meeting of shareholders has been called to be held at Montreal, April 22, to authorize an issue of bonds to provide for the building of the line from Montreal to Midland, Ont., and for other purposes. J. D. Wells, Montreal, is secretary.

The Chinook Ry. Co. has been incorporated by the Alberta Legislature to build a line from the Chinook Coal Co.'s mines to Kipp on the C.P.R. Crowsnest branch. The provisional directors are:—J. C. Reid, L. G. DeVeber, S. J. Shepherd, Lethbridge, Alta. This line has already been built, and extends from the mines in sec. 12, tp. 10, range 22, west of the 4th meridian, to mileage 59.09 on the C.P.R. Kipp-Alderside branch. It is being operated by the C.P.R. for coal traffic under a recent order of the Board of Railway Commissioners. (Feb., pg. 83.)

Edmonton, Dunvegan and British Columbia Ry.—Track has been laid to Sunniebend, mileage 70, north of Edmonton, Alta., and work is being proceeded with rapidly. Grading has been completed for 80 miles, and the right of way has been cleared to the Athabasca River at Mirror. It is reported that preparations are being made for the erection of a steel bridge at that point, and that large quantities of camp supplies and construction material have been shipped across the river and stored at various points up to Lesser Slave Lake in preparation for the season's construction work. Sub-contracts are reported let for 170 miles of grading this season. (Feb., pg. 83.)

Esquimalt and Nanaimo Ry.—We are officially advised that while there have been considerable negotiations with the British Columbia Government and the Canadian Northern Pacific Ry. as to the division of the Songhees Reserve, Victoria, and its disposition for railway purposes, all matters are not yet finally agreed upon.

A slip, with transfer apron and trestle complete with the necessary dolphin for moving barges at Esquimalt, B.C., was expected to be completed early in March. The slip is intended to furnish additional facilities for transferring rail freight by barge between Vancouver and Victoria. The contract was let to E. R. Doe, Victoria. (Jan., pg. 20.)

Essex Terminal Ry.—A large area has been acquired south of the race track in Windsor, Ont., by the company for laying out yards. The matter is under consideration by the city council, with a view to obtaining a street extension through the property before the yards are laid out. (Aug., 1912, pg. 411.)

Fredericton and Grand Lake Coal and Ry. Co. Construction is reported to have been started on the spur line from Fredericton to Marysville, N.B., the contract for which is reported to have been let to A. E. Trites and Son. (Jan., pg. 20.)

Gananoque and Arnprior Ry.—The provisional directors named in the application to the Ontario Legislature for the incorporation of this company are:—F. A. Heney, R. A. Sibbit, J. C. Judd, Ottawa; W. T. Sampson, Gananoque, Ont.; J. A. Donovan, Toronto; F. B. Taber, Morton, Ont.; D. W. Green, Lyndhurst, Ont. (Feb., pg. 83.)

The Glengarry and Stormont Ry. is projected to run from the C.P.R. near St. Polycarpe Jct., via Williamstown and Martintown, to Cornwall, Ont. It is said that surveys have been completed; that M. J. McLennan, D.L.S., Williamstown, has been retained to purchase the right of way and that it is expected that construction will be started this summer. C. L. Hervey C.E., Montreal, is one of the provisional directors. (Aug., 1912, pg. 411.)

Ha Ha Bay Ry.—We are officially advised that the branch from Chicoutimi to Labrosse Jct., 2.5 miles, is now operated by electricity, two electric motors taking care of the freight and passenger service. The Laterriere branch is being extended to Lake Kenogami, four miles. The contractors are Riverin and Riverin. The grading is mostly completed, and it is expected to have track laid and the extension in operation by May 1. The steel superstructure of the bridge at the mouth of Riviere a Mars is in course of erection, and when this is finished it will be possible to complete the line as far as the government wharf at Bagotville. During 1912, one mile of new track was laid. J. E. Robitaille, Chicoutimi, Que., is Comptroller. (Dec., 1912, pg. 604.)

High River and Hudson Bay Ry.—The Alberta Legislature has authorized an increase of the capital stock from $500,000 to $1,000,000; an increase of the bonding powers from $18,000 to $30,000 a mile, and and extension of time within which the projected line may be built. A. A. Ballachey, High River, Alta., is solicitor for applicants. (Feb., 1912, pg. 67.)

Huron Lake Shore Ry.—The application for the incorporation of a company with this title was defeated by 19 to 8 in the House of Commons railway committee. (Jan., pg. 20.)

International Ry. of New Brunswick.—The Maine Legislature has granted the right to build a bridge across the St. John River from Van Buren, Me., to St. Leonards, N.B. I. R. of N. B. officials are reported as stating that the bridge will be built during this year, the company already having authority from the Dominion Parliament. By the erection of this bridge the I. R of N. B., would be able to connect its line with the Bangor and Aroostook Rd. at Van Buren. (April, 1911, pg. 321.)

Intermarine Ry. and Navigation Co.—This line, the construction of which has been authorized by the Manitoba Legislature, is projected to start near the head of Lake Winnipeg and run northeasterly for 122 miles to a junction with the Dominion Government Railway to Hudson Bay at mileage 191 from Pas, Man. The provisional directors are W. J. Robertson, P. J. Gordon, W. D. Boyd, K. Clemes, C. F. Just, Winnipeg. (Feb., pg. 83.)

Kettle Valley Lines.—The engineers making the final survey of the extension of this line westerly to Hope, B.C., have completed their work. C. J. Seymour was in charge. (Feb., pg. 83.)

Lake Erie and Northern Ry.—The Minister of Railways has approved route map for the line from Brantford to Galt, Ont., 21 miles. A considerable mileage of the right of way was reported to have been purchased Mar. 13, and it was also reported that a contract had been let for the grading to Johnson Bros., Port Hope, Ont., and for masonry work to P. H. Secord and Sons, Brantford. Work will be started as soon as the plans have been approved by the Board of Railway Commissioners. (Feb., pg. 90.)

Lake Winnipeg and Nelson River Ry.—The Manitoba Legislature has incorporated a company with this title to build a railway from tp. 48, range 14, west 1st meridian, northeasterly to tp. 56, range 11, thence northerly to the south of Burntwood Lake, with branches to the Nelson River, in tp. 62, range 2, in tp. 72, range 1, and tp. 68, range 5. The provisional directors are:—J. B. Henderson., G. G Lennox, H. G. Holman, J. E. Kyle, J. Scott, Winnipeg.

London and Port Stanley Ry.—The London, Ont., City Council has decided not to enforce its claims against the company by foreclosure proceedings, and has decided to submit the question of the electrification of the line to the people at the earliest possible moment.

Application is being made to the Ontario Legislature by the city for power to lease the line, to authorize its electrification, and to operate it by commission or otherwise, after the passing of the necessary bylaws. (Oct., 1912, pg. 502.)

Michigan Central Rd.—The St. Thomas, Ont., City Council has been informed that the M.C.R. plans for a new powerhouse and machine shop in that city are about completed, and will be submitted for approval shortly. The cost of the new buildings is estimated at $150,000.

The Board of Railway Commissioners has authorized the company to connect its line with the Essex Terminal Ry. on the northerly side of the company's yard at Windsor, Ont.

Minneapolis, St. Paul and Sault Ste. Marie Ry.—An arrangement has been made, according to press reports, under which after July, 1912, the company will obtain an entrance into the Grand Central Station, Chicago, Ill., owned by its leased line the Wisconsin Central Ry., over the Baltimore and Ohio Rd. tracks. The present entrance to Chicago is over the Illinois Central Rd. tracks.

Press reports state that the company is preparing to spend $25,000,000 upon the construction of about 725 miles of new line, from near Plaza, N.D., to the International boundary near the Montana-Idaho boundary. The line will cross the Missouri River 30 miles west of Plaza, and run along the Yellowstone River for about 250 miles, and finally reach the International boundary line in Flathead County. (Feb., pg. 83.)

New Brunswick Coal, Iron and Clay Co.—Application is being made to the New Brunswick Legislature to incorporate a company with this title having power among other things, to build railway lines connecting the company's properties with other railways and the water front. Inches and Hazen, St. John, N.B., are solicitors for applicants.

Newfoundland.—We are officially advised that the Government of the Colony has not entered into a contract with a British company for the building of an 80 mile line from Green Bay to the east coast at Bay of Islands, as stated in press reports. The construction of such a line has, however, been authorized, and its construction by British capitalists, as a part of a new short line of communication between Great Britain and Canada, is under consideration. (Feb., pg. 83.)

Northern Pacific Ry.—G. T. Reid, Assistant to the President, is reported to have stated during his recent visit to New Westminster, B.C., that the company's trains would enter Vancouver over the Great Northern Ry. from Somers. The company will use the new terminals on False Creek now being built. (Oct., 1912, pg. 502.)

Ontario-Michigan Ry. — The Dominion Parliament has extended the time for the construction of this projected railway from Sarnia to Windsor, Ont. (July, 1911, pg. 647.)

Pacific Coast Ry.—Application is being made to the Dominion Parliament to incorporate a company with this title to build a railway from Hardy Bay to Squamish, Vancouver Island, about 20 miles, and to operate a line of steamships from Hardy Bay to the mainland and elsewhere. Bernard and McKeown, Montreal, are solicitors for applicants.

Pacific Great Eastern Ry.—The Superintendent of Construction is reported as stating Feb. 27, that 150 men were engaged on building a wagon road, and 300 men were working on the railway right of way, between Howe Sound and Bear Mountain. From Burkenhead easterly to Lillooet, 500 men were at work on the right of way. Satisfactory progress is being made, track laying will soon be started, and it is expected to have the line from Howe Sound to Lillooet completed during this year.

The question of the route between North Vancouver and Howe Sound, is still the subject of negotiation with the municipalities and the Provincial Government. The location surveys between Lillooet and Fort George are nearly completed.

The British Columbia Legislature has amended the act of incorporation of 1912, by authorizing the company to build the line from Lillooet "in a generally northerly direction by the most feasible route," instead of "along the bank of the Fraser River north," and by making the rate of interest on the guarantee bonds 4½ instead of 4 per cent., and a second act has been passed amending chap. 36 of the statutes of 1912 [illegible] (Feb., pg. 84.)

Peace River Great Western Ry.—The Alberta Legislature has granted an extension of time for the building of the line authorized by chap. 50 of the statutes of the second session of 1910. (Jan., pg. 21.)

Pointe Aux Trembles Terminal Ry.—The Dominion Parliament is being asked to incorporate a company with this title to build a railway at the Canada Cement Co.'s plant, lot 74, Pointe Aux Trembles, Que., with terminals; the work to be for the general advantage of Canada. Brown, Montgomery and McMichael are solicitors for applicants.

Portage Radial Ry. and Canal Co.—The Manitoba Legislature has incorporated a company with this title, to build a railway from Portage la Prairie to Winnipeg; from Portage la Prairie to Delta, with branch lines; and a canal from Lake Manitoba through the municipality of Portage la Prairie to the Assiniboine River. The company may develop and distribute hydroelectric power, and use the same, steam or any other motive power for the operation of its railway. The provisional directors named are:—W. Richardson, H. Stephens, F. G. Taylor, Portage la Prairie, Man.; B. L. Grant, St. Francois Xavier, Man.; A. H. Oakes, Winnipeg.

Prince Edward Island Ry.—The Minister of Railways was asked in the House of Commons recently if it had been decided to change the P.E.I. Ry. to standard gauge. He replied that the matter was receiving the Government's attention, and answered other question as to when the work would be commenced and when it would be finished by saying, "The matter is under consideration."

The estimates submitted to Parliament provide for $1,000 on account of original construction; $5,000 to increase accommodation and facilities on the line; $4,500 for machinery at Charlottetown; and $1,000,000 to provide car ferry and the necessary alterations, and change from narrow to standard gauge.

Tenders are under consideration for the construction of a car ferry terminal at Carleton Point, P.E.I., and tenders will be received to April 15, for constructing car ferry terminals at Cape Tormentine, N.B. The estimated cost of these terminals is from $1,500,000 to $2,000,000. (Jan., pg. 21.)

Quebec and Saguenay Ry.—Press reports state that an arrangement has been made with the creditors, under which one half of the indebtedness was to have been paid Mar. 15, and the balance on April 15. The report also adds that the arrangements made include the resumption of work on the line, and its completion to Murray Harbor, Que., during the summer. (Nov., 1912, pg. 558.)

Quebec press reports Mar. 16, stated that Mackenzie, Mann and Co. interests had deposited $350,000 to cover the balance owing by the company to O'Brien and Doheny, the general contractors, and that this was a preliminary step to the taking over of all length of 35 miles. The Trepossey branch

Reid Newfoundland Co.—We are officially advised that tracks were laid on the Hearts Content branch for 25 miles during 1912, completing the branch, which has a total length of 35 miles. The Trepassy branch will have a total length of 105 miles. Sixty miles of track had been laid up to the end of 1911, and an additional 40 miles were laid in 1912. The additional five miles will be laid this year, and it is expected to have this branch and the Heart's Content branch in operation by Aug. 1. Work is to be started this year on a branch of 52 miles from Carbonear to Bay-de-Verde, and for a branch of 54 miles from Come-by-Chance to Fortune Bay. Surveys have been made for a branch of 30 miles from Deer Lake to Bonne Bay, but it has not been decided when work will be started, though it is possible that something will be done this year. (Jan., pg. 21.)

St. John and Quebec Ry.—The Hibbard Co., Ltd., Fredericton, N.B., is considering subletting the track laying and ballasting on the contract between Fredericton and Woodstock, N.B.

Simcoe, Grey and Bruce Ry.—The Dominion Parliament has extended the time within which this projected railway from Kincardine to Orillia, Ont., may be built. (Dec., 1912, pg. 605.)

Taber Transit Co.—The Alberta Legislature has incorporated a company with this title to build a railway from sec. 31-9-16 west of the 4th meredian, northwesterly to sec. 12-10-7, with branches to sec. 33-9-17 and sec. 7-10-17; and a second line also from sec. 31-9-16 north and northeasterly to Bow City, Alta. The provisional directors are:—J. F. Kramer, V. O. Eastland, Calgary, Alta.; C. D. Holder, Dunmore, Alta.; J. Schissil, Canmore, Alta.; W. E. Bullock, F. Barton, Taber, Alta.; E. S. Kramer, Philadelphia, Pa.

Timiskaming and Northern Ontario Ry. We are officially advised that a contract has been let to MacDougall and McCluskey, Cochrane, Ont., for the clearing and grading of a private line to be known as the Iroquois Falls Branch. It will start from the main line at Iroquois Falls Jct., 225 miles from North Bay, and run northeasterly through Calvert Tp. to the Abitibi Pulp and Paper Mills Co.'s plant at Iroquois Falls on the Abitibi River, about seven miles. The work is very light, and it is expected to have the branch in operation by July 1.

The Elk Lake branch has been completed, and a regular train service is being operated. Engineers are in the field locating an extension of the branch from Elk Lake City into the Gowganda district.

Press reports state that plans have been made for the diversion of the line near the union station at Cochrane, and for the laying out of the yards there. It is said that the work will call for the removal of about 90,000 cubic yards of material.

Press reports stated that a survey party was to start from Cochrane, Mar. 20, in charge of P. Jobin, to make a hydrographic survey of certain parts of Hudson Bay, with a view of selecting a terminus for the proposed extension of the line to a port on the Bay. (Feb., pg. 84.)

Toronto, Hamilton and Buffalo Ry.—J. N. Beckley, President, has addressed a letter to the citizens of Hamilton, Ont., on the question of the Hunter street crossing. He states that the engineers employed by the company to examine into the whole question have reported, and that the company had replied to the petition of the Hunter St. residents to the Board of Railway Commissioners. The company claims that the tracks, as at present laid out, are lawfully located on Hunter St., and that it has the absolute right to maintain them at their present level and to operate thereon subject to the reasonable requirements imposed upon the company. Some time ago the company realized that at an early date crossings in the vicinity of the station should be eliminated. The whole of the data collected by the company's engineers was submitted to Westinghouse, Church, Kerr and Co., New York. After conferences with that company's engineer, and those representing the C.P.R., the New York Central R.R. and the Michigan Central Rd., a report was prepared recommending a plan of track elevation and subways for the streets as the only practicable solution of the problem. The estimated cost of this work is $760,590, against $2,940,000, the estimated cost of depressing the tracks and providing bridges over them for the streets. If the tracks were covered for the entire distance the estimated cost would be $3,825,000, exclusive of the cost of land and abuttal damages. The letter adds that copies of the engineer's reports have been sent to the city council, and that a drawing showing the recommended works had been sent for exhibition.

The company received tenders up to Mar. 31 for building a second track from Smithville to Welland, Ont., 16½ miles. (Mar., 1912, pg. 559.)

Western Canada Ry.—Application is being made to the Dominion Parliament for the incorporation of a company with this title to build a railway from Fort Churchill, Hudson Bay, to Sea Falls, Nelson River, thence north of Lake Winnipeg to Prince Albert, Sask., thence to Calgary, Alta., with a branch line from near Manitoba Lake to Edmonton, Alta. Vincent, Seguin and Labelle, Ottawa, are solicitors for applicants.

Wetaskiwin, Yellowhead and Pacific Ry.—The Dominion Parliament has incorporated a company with this title to build a line from Wetaskiwin, Alta., along the Saskatchewan and Brazeau Rivers to the Yellowhead Pass, thence to Revelstoke, B.C. (Dec., 1912, pg. 605.)

Railway Rolling Stock Notes.

The Duluth, Winnipeg and Pacific Ry. (C.N.R.) has ordered 400 box cars from the Mount Vernon Car Co.

The Algoma Eastern Ry. has received 3 forty ton steel frame box cars from Canadian Car and Foundry Co.

The C.P.R., between Feb. 12 and Mar. 12, ordered 2 buffet parlor cars from its Angus shops, and 10 wrecking cranes from F. H. Hopkins & Co.

The Canadian Northern Ry., between Feb. 15 and Mar. 14, ordered 6 sleeping cars from the Barney and Smith Car Co., and 55 cabooses from the Mount Vernon Car Co.

The Canadian Northern Ry., between Feb. 15 and Mar. 14, received the following additions to rolling stock:—150 box cars, 7 first class cars and 2 snow ploughs from the Canadian Car and Foundry Co.; 45 box cars from the Rathbun Co., and 22 cabooses from its Winnipeg shops.

The G.T.R. has received the following additions to rolling stock:—25 box cars and 4 refrigerator cars from the Canadian Car and Foundry Co.; 428 box cars from the Pressed Steel Car Co.; 15 Pacific type locomotives, 69 in. wheel, and 9 Pacific type locomotives, 73 in. wheel, from Montreal Locomotive Works; 9 switching locomotives from Canadian Locomotive Co., and 17 Mikado locomotives from American Locomotive Co.

An Ottawa press dispatch of Mar. 24 states that orders have been placed for locomotives for the Canadian Government Railways as follows:—4 Pacific type and 5 consolidation freight locomotives at $21,500 each, with the Montreal Locomotive Works; 5 switching locomotives, at $17,000 each, and 10 freight locomotives, at $24,000 each, with the Canadian Locomotive Co.; and 10 freight locomotives, at $24,000 each, with the Canada Foundry Co

The C.P.R., between Feb. 12 and Mar. 12, received the following additions to rolling stock:—1 flat car, 4 dining cars, 4 first class and smoking cars, 1 smoking car, 7 tourist cars, 8 second class cars, 11 box baggage cars, 1 superintendent's business car, 4 D.4 locomotives and 2 G.1 locomotives from its Angus shops; 121 steel frame box cars, 152 automobile cars from Canadian Car and Foundry Co.; 94 steel frame box cars from National Steel Car Co.; 16 steel frame box cars from Standard Steel Car Co.; 448 steel frame box cars from Barney and Smith Car Co.

The Intercolonial Ry., between Jan. 15 and Mar. 17, received the following additions to rolling stock:—100 flat cars, 80,000 lbs. capacity, 2 sleeping cars, 1 dining car and 1 tank car, from Canadian Car and Foundry Co.; 1 first class car from Preston Car and Coach Co.; 280 box cars from Nova Scotia Car Works; 5 refrigerator cars from E. E. Armstrong, Falmouth, N.S.; 3 locomotives from Canadian Locomotive Co., and 2 locomotives from Canada Foundry Co.

The Canadian Car and Foundry Co., between Feb. 15 and Mar. 15, delivered the following rolling stock:—To Algoma Eastern Ry., 3 forty ton steel frame box cars; Canadian Northern Ry., 6 first class cars, 158 thirty ton wood box cars; Canadian Pacific Ry., 8 forty ton steel frame box cars, 111 steel frame drop bottom box cars, 190 forty ton steel frame automobile cars, 1 forty ton steel underframe flat car; Canadian Steel Foundries, 6 slag cars; Dominion Coal Co., 50 fifteen ton wood hopper cars; F. H. Hopkins and Co., 2 thirty ton Lidgerwood flat cars, 3 thirty ton Rodger distributing ploughs; Grand Trunk Ry., 2 thirty ton steel underframe box cars; Grand Trunk Pacific Ry., 1 thirty ton refrigerator car; Intercolonial Ry., 1 forty ton steel tank car; 1 steel underframe dining car, 19 thirty ton wooden refrigerator cars; Montreal Tramways Co., 6 steel street car bodies.

J. D. McArthur Co., railway contractors, have ordered two mogul freight locomotives from the Montreal Locomotive Works. Following are the chief details:—

Cylinder, diar. and stroke	19 by 26 ins.
Tractive power	28,720 lbs.
Factor of adhesion	3.93
Wheel base, driving	12 ft. 6 ins.
Wheel base, total	20 ft 6½ ins.
Wheel base, engine and tender	49 ft 5¼ ins.
Weight in working order	130,000 lbs.
Weight on drivers	113,000 lbs.
Weight on engine truck	17,000 lbs.
Weight, engine and tender	246,500 lbs.
Boiler, type	Extended wagon top
Boiler, diar.	62 ins.
Boiler pressure	180 lbs.
Tubes, no. and diar.	240-2 ins.
Heating surface, tubes	1,301 sq. ft.
Heating surface, firebox	133 sq. ft.
Heating surface, total	1,434 sq. ft.
Grate area	28.1 sq. ft.
Driving wheels, diar.	50 ins.
Driving journals (main)	8½ x 12 ins.
" " (others)	8 x 12 ins.
Brakes	Westinghouse American
Tank	U shape, level top.
Capacity, water	5,000 imp. gals.
Capacity, coal	8 tons

Railway Accidents in January.—In connection with railway construction in Canada there were 7 fatal and 5 non fatal accidents during January. The deaths were caused by two separate explosions of dynamite. In steam railway operation, 43 fatal, and 114 non fatal accidents were reported. Of the fatalities, 11 were due to being run over, 9 to collisions, 7 to being crushed between cars, 5 each to being struck by trains, light locomotives, and cars, and to falls, and one each to a derailment, to striking an obstacle, to machinery, to electricity, to falling material, and to being run over by a horse at a level crossing.

The Quebec Central Ry. tracks are reported to have been considerably damaged as the result of serious floods in Beauce County.

Mainly About Transportation People.

Mrs. Angus, wife of R. B. ANGUS, director, C.P.R., died at Montreal Mar. 13, aged 80.

HAYTER REED, Manager in Chief, C.P.R. Hotels, returned to Montreal from England at the end of March.

W. WILKIE, for over 30 years Toronto manager for Hendrie and Co., cartage agents, died there Mar. 13, aged 87.

SIR WILLIAM MACKENZIE, accompanied by Lady Mackenzie, sailed from New York Mar. 5 for Great Britain.

G. H. PEDLAR, President of The Pedlar People, Ltd., Oshawa, Ont., died there Mar. 16 suddenly from heart failure.

H. H. BREWER, General Superintendent, G.T. Pacific Ry., returned to Winnipeg Feb. 28, after spending a holiday in California.

D. B. HANNA, Third Vice President, Canadian Northern Ry., has been elected a director of the Title and Trust Co., Toronto.

R. W. LEONARD, Commissioner, National Transcontinental Ry., and Mrs. Leonard, returned to Canada early in March from Great Britain.

G. FORD, General Superintendent, Dominion Express Co., at Winnipeg, Man., returned there Mar. 15 from California, where he spent some time.

W. I. GEAR, Vice President, Robert Reford Co., Ltd., Montreal, has been elected a director of the Bank of Toronto, to succeed the late R. Reford.

G. C. MURRAY, who has been appointed Telephone Inspector, G.T.R., Stratford, Ont., is a son of B. S. Murray, route agent, Canadian Express Co., London, Ont.

R. W. SCOTT, whose appointment as Superintendent of Monteral Terminals, G.T.R., was announced in our last issue, has been relieved of duty on account of poor health.

J. S. DENNIS, Assistant to the President, C.P.R., Calgary, Alta., who recently underwent on operation for gallstones, is reported to be making satisfactory progress.

Hon F. E. HODGINS, Judge of the Ontario Court of Appeal, has been appointed Deputy Judge in Admiralty for the Toronto Admiralty District of the Exchequer Court.

C. J. SMITH, ex-General Manager, Richelieu and Ontario Navigation Co., has opened an office in the Merchants' Bank Building, Montreal.

Miss Mary G. Hanna, elder daughter of D. B. HANNA, Third Vice President, Canadian Northern Ry., was married at Toronto, Mar. 6, to A. V. Lewis.

A. R. HUSTON, for the past three years station agent, G.T.R., at Woodstock, Ont., has been transferred to the General Superintendent's office, Montreal.

C. L. BARDO, heretofore Assistant to General Manager, Lehigh Valley Rd., has been appointed General Manager, New York, New Haven and Hartford Rd.

N. KINSELLA, private secretary to E. J. Chamberlin, President G.T.R. and G.T.P.R., has resigned to engage in business in Winnipeg.

B. D. ATKINSON was presented with a clock by the headquarter staff of the Canadian Express Co. at Montreal, Mar. 10, on resigning the position of office supply clerk to enter private employ.

The Canadian Ticket Agents' Association has admitted to membership W. S. Metzler, North Bay, Ont.; H. B. Elliott, G.T.R., Wingham, Ont., and H. W. Bell, G.T.R., Midland, Ont.

E. J. CHAMBERLIN, President G.T.R. and G.T.P.R., and Mrs. Chamberlin, have moved from Ottawa to Montreal, where they have taken up their residence at 257 Peel St.

W. E. COSTELLO, who recently resigned as Superintendent, Central Vermont Ry., New London, Conn., has been appointed Superintendent, Houston and Texas Central Rd., Ennis, Tex.

SIR DONALD MANN was recently described by a New York correspondent of a Canadian daily paper as "of the Canadian Parliament." Thus the honor is thrust on the man.

SIR JOHN JACKSON arrived in Montreal from England, Mar. 4, and subsequently went to Victoria, B.C., where his firm has a contract for the improvement and extension of the harbor.

J. A. DUFFLE, who died in the Victoria Hospital, Montreal, Feb. 23, was for 30 years in G.T.R. service, serving until his illness as chief clerk in the Motive Power Department.

The late J. P. MABEE, Chief Commissioner of the Board of Railway Commissioners, died intestate, and his estate, valued at $42,000, will be divided between his two children.

A. P. Walker, M. Can. Soc. C.E.,
Division Surveyor, Ontario Division, Canadian Pacific Railway.

JAS. PLAYFAIR, Vice President and Managing Director, Richelieu and Ontario Navigation Co., and Mrs. Playfair, left Midland, Ont., Mar. 5, for a trip to Florida, and are expected to return early in April.

SIR WILLIAM H. WHITE, K.C.B., formerly Director of Naval Construction and Assistant Controller of the British Navy, who died in London, Eng., Feb. 27, was a director of the G.T. Pacific Ry.

R. WILSON, of the Cowan Construction Co., Winnipeg, died there recently, aged 54. He was born in England, and was engaged in railway construction work in western Canada since 1882.

A. F. DION was recently presented with a leather travelling bag and address on leaving the Canadian Northern Ry. freight department, Montreal, to become Traffic Manager, Quebec Harbor Commission.

J. E. MORAZAIN was presented with a gold watch and chain by the C.P.R. staff at Quebec on his recent transfer from the position of agent to that of Assistant Superintendent.

J. STEWART, of the contracting firm of Foley, Welch and Stewart, is reported by a London cable to have purchased 50,000 acres of land in his native county of Sutherland, Scotland, from the Duke of Sutherland.

J. POWELL, Chief Draughtsman, G.T.R. Motive Power Department, Montreal, and Secretary, Canadian Railway Club, has just recovered from a broken left wrist, occasioned by a fall when skating during the latter part of January.

C. THACKER, who has retired from the C.P.R. car department, with which he has been engaged for about 30 years, was presented recently with a suitably engraved clock by the car department staff at Winnipeg.

G. W. BOYD, for more than 12 years General Passenger Agent, Pennsylvania Rd., has been appointed Passenger Traffic Manager, vice J. R. Wood, retired under the pension rules on attaining 70 years of age.

W. RUSSELL, a private banker, who died in Winnipeg, Man., Mar. 3, was engaged in the C.P.R. service in its early years in the province, having been station agent at Brandon, North Portal, Gretna and Portage la Prairie.

F. H. CLERGUE, who is associated with the North Ry. enterprise, addressed the McGill University Canadian Club, Mar. 10, on the resources of the country lying between Montreal and Hudson Bay, through which the railway will pass.

C. N. ARMSTRONG, principal promoter of the Central Ry. of Canada and other railway enterprises, will, it is said, contest the Colne Valley district of Yorkshire for the House of Commons at the next general election in England.

J. K. McNEILLIE, who has been appointed Superintendent C.P.R. Terminals at Montreal, was entertained at dinner and made the recipient of a testimonial from residents of Farnham, Que., Mar. 1, on his leaving to take up his new position.

J. J. BRIGNALL, who recently resigned the position of Travelling Passenger Agent, C.P.R., Toronto, on his appointment as Travelling Passenger Agent, Robt. Reford Co., as announced in our last issue, was on Mar. 14 presented with a purse of gold and a bag by a number of his associates.

J. E. BEDFORD, who has been appointed Master Car Painter, Intercolonial Ry. Shops, Moncton, N.B., entered I.R.C. service as a painter's apprentice, Mar., 1877, and was appointed charge hand of the paint stock room in 1902, which position he held until his present appointment.

SIR WILLIAM WHYTE, who intended joining the party making an all round the world trip on the C.P.R s.s. Empress of Russia, decided to abandon the journey on account of illness. He will probably take a somewhat shorter trip later on, as soon as his health will permit.

G. H. DUGGAN, M. Can. Soc. C.E., heretofore Chief Engineer, Dominion Bridge Co., Montreal, has been appointed General Manager, and has been succeeded in the former position by R. S. Buck, M. Can. Soc. C.E., M. Am. Soc. C.E., who has been practising in New York as a consulting engineer.

C. O. FOSS, to whom reference was made under the heading of Birthdays of Transportation Men in March, in our last issue, is District Engineer, National Transcontinental Ry., St. John, N.B., but by trans-position of lines, his position was wrongly described.

Hon. JOHN HAGGART, M.P., who died at Ottawa Mar. 13, was born at Perth, Ont., Nov. 14, 1836. He was Minister of Railways and Canals from Jan. 11, 1892, to June, 1896, under four successive premiers.

W. E. BISHOP, formerly General Manager, Hamilton Steamboat Co., Hamilton, Ont., and since the absorption of that company by the Richelieu and Ontario Navigation Co., General Agent of the latter company there, has resigned to enter private business in the same city.

J. G. SULLIVAN, Chief Engineer, Western Lines, C.P.R., Winnipeg, was elected a director of the American Railway Engineering Association at the recent annual meeting. H. R. SAFFORD, Chief Engineer, G.T.R., was elected a member of the nominating committee.

T. C. KEEFER, C.M.G., Hon. M. Can. Soc. C.E., and a past President of that society, has been elected an honorary member of the Institute of Civil Engineers, of Great Britain. The list of honorary members of this society, which in 1912 consisted of 20 persons, includes a number of royal personages and members of the British peerage.

JAS. ATKINSON was presented with an arm chair and a reading lamp by the Car Foremen's and Inspectors' Association at Windsor, Ont., Feb. 26. He entered the Canada Southern Ry. service in 1872, subsequently becoming car foreman at Windsor, and latterly acting as chief joint inspector of cars and arbitrator for the different railways entering Windsor.

W. FRASER, who died at Kentville, N.S., Feb. 20, aged 70, was superannuated from the Dominion Atlantic Ry. service in 1911. In 1879 he was appointed station master on the old Western Counties Ry., and passing over to the D.A. Ry., became General Freight Agent at Halifax in 1897; and in 1900 Traffic Superintendent at Kentville. He was also Manager of the Maritime Express Co.

A. B. CHOWN, who has been appointed Travelling Passenger Agent, G.T.R., Pittsburgh, Pa., was born at Belleville, Ont., Aug. 4, 1887, and entered G.T.R. service Apr. 1, 1907, since when he has been, to June, 1909, night ticket clerk, Belleville station, Ont.; June, 1909, to Mar. 1, 1911, day ticket clerk, Belleville station, Ont.; Mar. 1, 1911, to Mar. 1, 1913, Soliciting Passenger Agent, Toronto City Office.

E. H. EDEN, Commercial Agent, Delaware, Lackawanna and Western Rd., who died at Minneapolis, Minn., Mar. 11, began his railway career with the G.T.R. at Buffalo, and prior to joining the D.L. and W. Rd. service was on the auditing staff of the Minneapolis, St. Paul and Sault Ste. Marie Ry. One of his sons, John C., was formerly Assistant Traffic Manager, Great Northern Ry., at Minneapolis.

A. H. HOGELAND, M. Am. Soc. C.E., who was recently appointed Consulting Engineer, Great Northern Ry., St. Paul, Minn., was born in Pennsylvania in 1858, and commenced his railway career as rodman and leveller on surveys and construction, St. Paul and Pacific Ry., in 1879. From 1890 to 1896, he was Engineer of Maintenance of Way, Eastern District, 1896 to 1902, Resident Engineer, Eastern District, 1902 to 1903, Assistant Chief Engineer, and 1903 to the date of his present appointment, Chief Engineer, Great Northern Ry.

J. I. HOBSON, who has been appointed Comptroller and Treasurer, Richelieu and Ontario Navigation Co., Montreal, was born at Guelph, Ont., Mar. 30, 1872, and entered transportation service Mar., 1910, prior to which he was, from July 1888, to Apr., 1892, with Knox, Morgan and Co., wholesale merchants, Hamilton, Ont., and subsequently, to Mar., 1910, with the Bank of Hamilton, the latter four years, as Manager at Owen Sound, Ont. Before receiving his present appointment, he was Treasurer, Inland Lines, Ltd., Hamilton, Ont.

C. Forrester,
Superintendent, Stratford Division, Ontario Lines, Grand Trunk Railway.

E. W. HOLTON, who has been appointed General Passenger Agent, Northern Navigation Co., Sarnia, Ont., was born at Belleville, Ont., Dec. 15, 1872, and entered transportation service as junior clerk in the local freight office, at Belleville, Ont., and until Mar., 1904, was chief clerk to General Freight and Passenger Agent, Bay of Quinte Ry., Deseronto, Ont.; Mar., 1904, to Feb. 1, 1910, chief clerk to Traffic Manager, Northern Navigation Co., Sarnia, Ont.; Feb. 1, 1910, to Mar. 12, 1913, Eastern Passenger Agent, same company, Sarnia, Ont.

W. B. Way.
Superintendent, District 1, Eastern Division, Canadian Pacific Railway.

PETER PATON, who has been appointed Manager, Northern Navigation Co., Sarnia, Ont., was born at New Lowell, Ont., Mar. 13, 1869, and entered Northern Navigation Co.'s service May 1, 1911, as Western Travelling Agent, Winnipeg. He was appointed Assistant to the President at Sarnia, Ont., May 1, 1912, which position he held to Mar. 1, 1913, the date of his present appointment. Prior to entering transportation service, he was from June, 1885, to May 1, 1911, in mercantile business, during the latter portion of this period as Manager, Collingwood Packing Co., Ltd.

H. D. PATERSON, who has been appointed General Agent, Passenger Department, Richelieu and Ontario Navigation Co., Toronto, was born at Port Perry, Ont., Sept. 5, 1881, and entered transportation service in 1897, since when he has been, to 1898, clerk, City Ticket Office, G.T.R., Toronto; from 1899 to Mar. 1, 1913, consecutively, clerk and stenographer, District Passenger Agent's office, C.P.R., Toronto; clerk and stenographer, General Agent's office, Chicago and North Western Ry., Toronto, and Travelling Passenger Agent, Richelieu and Ontario Navigation Co., Toronto.

T. A. WILSON, who was recently appointed Assistant Superintendent, District 3, Lake Superior Division, C.P.R., Schreiber, Ont., was born at Stratford, Ont., Jan. 27, 1872. Prior to Feb., 1891, he was car checker, G.T.R., Stratford, Ont., and assistant agent, same road, Kincardine, Ont.; Feb., 1891, to Aug., 1892, consecutively, operator and agent, same road at various points between Toronto and Sarnia, and in train service at Windsor and Allandale, Ont.; Aug., 1892, to Oct., 1900, agent, C.P.R., at various points on the Lake Superior Division; Oct., 1900, to Oct., 1912, Yard Agent, C.P.R., Ottawa.

L. A. W. DOHERTY, who has been appointed Freight Traffic Manager, Richelieu and Ontario Navigation Co., Toronto, was born there, April 10, 1878, and entered transportation service, July, 1896, since when he has been, to 1897, clerk to Assistant Freight Traffic Manager, C.P.R., Toronto; 1897 to 1906, chief clerk to General Freight Agent, C.P.R., Toronto; 1907 to 1908, chief clerk to Assistant Freight Traffic Manager, C.P.R., Toronto; 1908 to 1910, Assistant Manager, Inland Navigation Co., Hamilton, Ont.; 1911 to Feb. 27, 1913, Traffic Manager, Inland Lines Ltd., Hamilton, Ont.

H. H. GILDERSLEEVE, who has been appointed Manager, Western Lines, Richelieu and Ontario Navigation Co., Toronto, and whose portrait appears in this issue, was born at Kingston, Ont., Dec. 15, 1865, and after spending six years in the Bank of Montreal, entered Lake Ontario and Bay of Quinte Steamboat Co.'s service in 1890, since when he has been, to 1894, purser on one of the company's vessels, bookkeeper and auditor in the company's office, and Freight and Passenger Agent; 1894 to Feb., 1904, General Manager, same company; Feb., 1904, to Feb. 27, 1913, Manager, Northern Navigation Co., Collingwood, and latterly at Sarnia, Ont.

W. B. WAY, whose appointment as Superintendent, District 1, Eastern Division, C.P.R., Farnham, Que., was announced in our last issue, and whose portrait appears in this issue, was born at Bowmanville, Ont., Aug. 22, 1867, and entered C.P.R. service, Sept., 1884, since when he has been, to Feb., 1888, telegraph operator, North Bay, Ont.; Feb., 1888, to Oct., 1899, dispatcher, North Bay, Ont.; Oct., 1899, to Nov., 1906, Chief Dispatcher, Chapleau, Ont.; Nov., 1906, to Sept., 1907, Trainmaster, White River, Ont.; Sept., 1907, to May, 1911, Assistant Superintendent, Chapleau, Ont.; May, 1911, to Feb., 1913, Assistant Superintendent, District 3, Eastern Division, Montreal.

W. M. HOOD, who has been appointed Travelling Passenger Agent, Canadian Northern Ry. and Canadian Northern Steamships Ltd., Toronto, was born at Harrow, Ont., Nov. 25, 1872, and entered transportation service, Nov. 1, 1892, since when he has been, to 1900, Local Freight and Passenger Agent, Lake Erie and Detroit River Rd., McGregor, Ont.; 1900 to 1901, Travelling Freight and Passenger Agent, same road, Cleveland, Ohio; 1901 to 1905, Local Freight Agent, same road, Sarnia, Ont.; 1905 to 1910, Local Freight Agent, Pere Marquette Rd., Chatham, Ont.; 1910 to Feb., 1913, Travelling Passenger Agent, same road, London, Ont.

L. L. HENDERSON, General Manager, Montreal Transportation Co., who has been elected President, Dominion Marine Association and whose portrait appears in this issue, was born at Kingston, Ont., Mar. 5, 1866, and entered the Montreal Transportation Co.'s service in 1884 as clerk, and passing through the various departments was appointed agent at Kingston in 1896, and General Manager in 1909. He is also a director of the Montreal Transportation Co., and a director of the Montreal Dry Dock and Ship Repairing Co., besides being connected with some realty and investment companies, and was a member of the council of the Montreal Board of Trade for 1911-12.

A. T. SHORTT, whose appointment as Superintendent of Ogden Shops, C.P.R., Calgary, Alta., was announced in a recent issue, was born in Quebec in 1873, and entered railway service in 1880, since when he has been, to 1884, apprentice machinist, G.T.R.; 1884 to 1885, machine fitter, G.T.R.; 1885 to 1898, fitter, Canadian Locomotive Co., Kingston, Ont.; 1898 to 1905, fitter, C.P.R.; 1905 to 1906, Foreman, Calgary Shops, C.P.R.; 1906 to 1908, General Foreman, Calgary Shops, C.P.R.; 1908 to 1910, District Master Mechanic, Crowsnest District, C.P.R.; 1910 to 1912, General Master Mechanic, Saskatchewan Division, C.P.R.; 1912 to Jan. 18, 1913, General Master Mechanic, Alberta Division, C.P.R.

T. HENRY, who has been appointed Manager, Eastern Lines, Richelieu and Ontario Navigation Co., Montreal., and whose portrait appears in this issue, was born in Montreal, May 29, 1865, and entered transportation service in 1879, since when he has been, to 1881, ticket agent, Ottawa River Navigation Co., Montreal; 1881, local freight agent, same company, Montreal; 1881 to 1882, clerk in audit office, G.T.R., Montreal; 1882 to 1884, ticket clerk, City Ticket Office, G.T.R., Montreal; 1884 to 1887, clerk, Northern Pacific Ry.; 1887 to 1900, District Freight and Passenger Agent, Northern Pacific Ry., Montreal; 1900 to Feb. 27, 1913, Traffic Manager, Richelieu and Ontario Navigation Co., Montreal.

ROBERT REFORD, President Robert Reford Co., Ltd., shipping agents, Montreal, died there Mar. 15, aged 82. A native of Belfast, Ireland, he came to Canada in 1845, settling in Toronto, where he conducted a wholesale grocery and shipping business. He moved to Montreal in 1865, continuing in the same business, but the shipping end of it became the most important, and he ultimately devoted himself entirely to it. The business was incorporated under the present title in 1897, and acts as agents for the Donaldson, Cunard, and Lord Lines of steamers. During the last few years he gave large sums to public institutions, including $150,000 to McGill University; $35,000 to Montreal General Hospital, and $10,000 to Montreal Y.M.C.A.

M. B. Dube,
General Foreman of Shops, Grand Trunk Pacific Ry., North Transcona, Man.

G. H. Jenkins,
Assistant to General Purchasing Agent, Grand Trunk Railway

R. F. MORKILL, who has been appointed Signal Engineer, G.T.R., Montreal, was born at Sherbrooke, Que., June 7, 1878. From 1898 to 1899 he was Assistant Engineer, West Kootenay Electric Power Co., Rossland, B.C.; 1899 to 1901, Superintendent, St. John's Electric Ry. Power and Lighting Co., Reid Newfoundland Co., St. John's, Nfld.; 1902, Assistant Electrical Engineer, Simmer and Jack Gold Mines, Ltd., Johannesburg, South Africa; 1902 to 1908, Engineer in charge of Signalling, Central South African Railways, Johannesburg, S.A.; 1910 to 1911, Assistant Engineer of Signalling for Union Switch and Signal Co., New York; 1911 to Mar. 1, 1913, Sales Manager and Assistant General Manager, Railway Signal Co. of Canada, Montreal.

H. FOSTER CHAFFEE, who has been appointed Passenger Traffic Manager, Richelieu and Ontario Navigation Co., Montreal, and whose portrait appears in this issue, was born at Knowlton, Que., Dec. 18, 1868, and entered transportation service in 1883, since when he has been, to 1884, ticket clerk, South Eastern Ry., Montreal; 1884 to 1885, ticket clerk, C.P.R., Montreal; 1885 to 1895, City Passenger and Ticket Agent, Richelieu and Ontario Navigation Co., Montreal; 1895 to 1900, also in charge of the company's transfer books; 1900 to Feb., 1907, Western Passenger Agent, same company, Toronto; Feb., 1907 to June, 1912, Assistant General Passenger Agent, same company, Toronto; June, 1912, to Feb. 27, 1913, General Passenger Agent, same company, lines west of Prescott, Ont., Toronto.

J. H. CORMICK, whose appointment as Signal Engineer, Canadian Northern Ry., Winnipeg, was announced in our last issue, has been connected with the manufacturing side of the signalling business since 1890, when he entered the Union Switch and Signal Co.'s service, during which period he acted for that company as battery man on the Boston and Albany Rd., subsequently being engaged by the B. & A.R., and remaining with that company for five years. He later returned to the manufacturing business with the American Automatic Switch and Signal Co., and again re-entered railway service, his subsequent experience covering service with the Boston and Maine Rd., New York, New Haven and Hartford Rd., Boston Elevated Ry., Interborough Rapid Transit Co., U.S. Government, Hall Signal Co., General Railway Signal Co., and Northern Pacific Ry., latterly as Signal Inspector, St. Paul, Minn.

A. P. WALKER, M. Can. Soc. C.E., whose appointment as Assistant Division Engineer, C.P.R., Toronto, was announced in our last issue, was born at West Hartlepool, Eng., Dec. 9, 1860, and entered Canadian railway service Apr. 15, 1882, since when he has been, to July, 1882, right of way surveyor, C.P.R., Norwood, Ont.; July, 1882, to Dec., 1883, Assistant Engineer of Construction, C.P.R., Bethany, Ont.; Mar. to Nov., 1884, Assistant Engineer of Construction, C.P.R., Peterboro, Ont.; Nov., 1884, to Mar., 1885, Assistant Engineer of Construction, G.T.R., South River, Ont.; Feb. to Apr., 1886, on special surveys, C.P.R., Montreal; Apr., 1886, to Apr., 1887, Assistant Engineer of Construction, C.P.R., Green Valley, Ont.; Apr., 1887, to Jan., 1889, Engineer in charge of location, C.P.R., Ottawa, Ont.; Apr., 1890, to Apr., 1891, on special surveys, C.P.R., Toronto; Apr., 1891, to Feb., 1913, Assistant Division Engineer, C.P.R., Toronto.

PETER S. ARCHIBALD, M. Can. Soc. C.E., who died at Moncton, N.B., Mar. 16, of Bright's disease after a brief illness, was born at Truro, N.S., Mar. 21, 1848, and was educated at the Truro Normal and Model schools. He joined the Intercolonial Ry. survey staff in 1867, under Sir Sandford Fleming, and acted as assistant and resident engineer during the construction period. He became Assistant Engineer of Maintenance of Way in 1874, and in 1879 was appointed Chief Engineer at Moncton in succession to Collingwood Schreiber, which position he retained until 1898. He was a member of both the Canadian and the American Societies of Civil Engineers, of the former of which he was Councillor in 1894, 1895, 1901 and 1912. In 1894 he was appointed a member of the Royal Commission to enquire into the alleged excessive freight rates charged by the C.P.R. in Manitoba and the Northwest. On leaving the Dominion Government Railways, he engaged in practice as a consulting engineer, and his services were in constant request. In 1902 he was chairman of the board of arbitrators appointed to settle the $2,000,000 claims made by the Reid Newfoundland Co. against the Newfoundland Government; subsequently he was engaged as the engineering expert in the settlement of disputes arising out of the construction of the Algoma Central and Hudson Bay Ry., and in 1907 acted as a member of the conciliation board in settlement of disputes between the Cumberland Ry. and Coal Co. and its employes. In 1908 he was appointed a member of the commission operating the New Brunswick Coal and Ry. Co.'s line for the N.B. Government, which appointment he held up to his death. He was also General Manager of the Elgin and Havelock Ry. up to his death. He made a number of surveys in 1902 in connection with a project for building a bridge across the Strait of Canso. The funeral took place Mar. 19, the body being taken from Moncton, N.B., to Antigonish, N.S., in the private car of D. Pottinger, Assistant Chairman, Government Railways Managing Board.

Canadian Pacific Railway, Construction, Betterments, Etc.

Branch Lines Legislation.—The Dominion Parliament has granted extensions of time for the building of lines under construction or projected by the following companies, whose charters are held in the interests of the C.P.R.: Ottawa, Northern and Western Ry.; Collingwood Southern Ry.; Manitoba and Northwestern Ry.; Alberta Central Ry.; Alberta Ry. and Irrigation Co.; British Columbia Southern Ry.; Kootenay and Arrowhead Ry.

Atlantic Division.—It has been stated by a member of the New Brunswick Government that the C.P.R. is arranging to build a new railway bridge near the present cantilever bridge across the St. John River at the Reversible Falls.

Tenders are being asked for the erection of a concrete machine shop at McAdam Jct., N.B., to replace the present shop.

W. Downie, General Superintendent, is reported to have stated Mar. 13, that 715 miles of track on the division will be relaid with heavier rails, and block signalling will be installed between St. John and Vanceboro during the year.

Eastern Division.—Work is to be carried on this year on the second track from St. John to Farnham Jct., Que.

Interprovincial and James Bay Ry.—We are officially advised that the only work in immediate construction on this projected railway, is on a 10 mile section northerly from Kipawa, Que., contract for which was let in Sept., 1912. The work is in charge of C. W. P. Ramsey, Engineer of Construction, C.P.R., Montreal. (Nov., 1912, pg. 558.)

Campbellford, Lake Ontario and Western Ry.—The Dominion Parliament has extended the time within which this line may be built. This line extends from Glen Tay, Ont., to which point there is a double track from Montreal, to the Lake Ontario shore near Brockville, and thence parallel to the G.T.R. on the south side to Port Hope, thence on the north side to Agincourt, from which point the existing line is [illegible] The entire line is under contract, and well advanced to completion so far as grading [illegible]. A start is to be made on track laying early in April.

A meeting of shareholders has been called to be held in Montreal, April 16, for the purpose of approving a lease of the line when completed, to the C.P.R.; to arrange for the raising of money for construction [illegible]

Ontario Division.—A second track is to be built from Agincourt, the point where the Campbellford, Lake Ontario and Western Ry. joins the Montreal-Toronto line, into Toronto, 15 miles. Engineers are completing the surveys and plans.

Tenders are under consideration for building the substructures of subways at Davenport and Spadina Roads, Howland Ave., and Bathurst St., North Toronto. These are a part of the grade separation work now in progress there, in the carrying out of which the Canadian Northern Ry. is interested. B. Ripley, 262 Avenue Road, Toronto, is engineer in charge of the work.

D. McNicoll, Vice President, was in Toronto, Mar. 14, and is reported to have said the work was not being pushed ahead as fast as it might be, on account of the objection raised by the city to the height of the subways. As soon as this matter was settled, the work would proceed without interruption.

The Ontario Legislature has before it for confirmation the sale of the old Government House property in Toronto to the C.P.R. by the Ontario Government. The purchase price was $800,000. The company acquired considerable additional land adjoining, and the work of laying out the area as yards is nearly completed. Several large sheds and an office building are about ready for occupation. Access to the yard is obtained by a line leaving the C.P.R. main tracks near Bathurst St.

Engineers are completing the surveys for the second track work from near Islington to Guelph Jct., 30 miles. There will be apparently a slight deviation from the present tracks from near Dixie to the crossing of Dundas St. at Cooksville station, as right of way agents have been negotiating for an 80 ft. strip to the south of the present track. This will reduce the curve approaching Cooksville. A contract has been let to Jones and Girouard, Ottawa, for this 30 miles of second track and it is expected to be completed this year.

The taxpayers of Stratford, Mar. 10, by 1,063 votes to 936, defeated a bylaw granting a right of way by what is known as the South River route through Stratford, for a line which would connect the St. Marys and Western Ontario Ry. at St. Marys with the Guelph and Goderich line near Millbank. H. P. Timmerman, of the C.P.R., who was in Stratford recently, is reported to have stated that the alternative route would cost $500,000 more than the South River one, and was not so convenient. J. W. Leonard, Assistant to the Vice President, was reported to have stated, Mar. 16, that the project for the line into Stratford was abandoned for the present as the result of the defeat of the bylaw.

Lake Superior Division.—Surveys are in progress for the carrying out of plans for building a second track between Romford, the junction of the line from Toronto with the main transcontinental line, and Fort William, 553 miles. About 75 miles in short sections were completed last year, and we are officially advised that contracts have been let for the following additional mileages to be gone on with this year:—Agilda, mileage 86.1 to Cartier, mileage 114.6, Cartier Subdivision, Cook Construction Co., Sudbury, Ont.; from Tarpon, mileage 3.3 to Mobert, mileage 23.5, Schreiber Subdivision, Chambers, McQuaig, McCaffrey and Cochrane; from mileage 120 to Devon, mileage 132.4, Chapleau Subdivision, Dominion Construction Co., Toronto, which company has also secured the following mileages:—from Esher, mileage 7.1 to 40, White River Subdivision; from mileage 43 to Heron Bay, mileage 55.5, Schreiber Subdivision; from Selim, mileage 8.7 to 23, and from mileage 29 to 40, Nipigon Subdivision. It is also proposed to carry out some work of grade revision on the Sault Ste. Marie Branch during this year.

Manitoba Division.—The substructure has been completed for the double track bascule bridge at Island No. 2, Fort William, Ont., and considerable work has been done towards the preparation of the steel superstructure. An additional story is being added to the company's freight office building on the Kaministikwia River, Fort William, which will be devoted to the grain business. Tenders are under consideration for the erection of an extension to the car shops at Fort William.

New station buildings are to be built during this year at Edrans, Stony Mountain and Arnaud, Man.

Saskatchewan Division. — Tenders are under consideration for the erection of A2 stations at 20 points on this division, and for a boiler and machine shop at Wilkie.

The Board of Railway Commissioners has approved revised location plans for the Kerrobert northeasterly branch, mileage 20.2 to 36.10, and the Minister of Railways has approved the route map for revision of branch line from Lanigan to Prince Albert, Sask., 117.14 miles.

Alberta Division.—Tenders are under consideration for the construction of a reinforced concrete bridge at Anthony St., Strathcona; A2 stations at nine points on the division; and additions to locomotive houses at Strathcona and Calgary.

Construction is being pushed on the Weyburn-Lethbridge line, from both directions, and it is expected to have the grading practically completed, and most of the track laying done this year.

Kootenay Central Ry.—Press reports state that contracts were signed Mar. 14, for the completion of this line, 80 miles, which will give a direct connection between the Crowsnest Pass line near Galloway, and the transcontinental line at Golden. Burns and Jordan, Spokane, Wash., are reported to have a contract for 60 miles; and Boomer and Hughes, Spokane, Wash., for the remaining 20 miles. The work is to be completed by the end of 1914.

Pacific Division.—A contract has been let to W. P. Tierney, Vancouver, for the completion of the standard gauge line on the Kaslo and Slocan Ry., recently taken over by the C. P. R., including the mileage between Whitewater and Kaslo. Work has been started, J. R. Paget, Kaslo, B.C., engineer in charge.

Work has been resumed on the Port Moody line, a large gang of men being engaged in ballasting operations, broken rock being used.

Press reports state that work will be started early in April relaying the New Westminster Branch with 90 lb. steel.

C.P.R. Elevator Construction at Fort William.—A contract is reported to have been let to the Canadian Stewart Co. for the erection of a 3,000,000 bush. addition of the C.P.R. elevator D. W. R. Sinks, General Manager of the contracting firm, is reported to have stated that the material for the building has been ordered, and that it is expected to have the work completed by the fall.

Canadian Railway
AND
Marine World
ESTABLISHED 1898

Devoted to Steam and Electric Railway, Marine, Express, Telegraph, and Railway and Canal Contractors' Interests.
Official Organ of the various Canadian Transportation Associations.

ACTON BURROWS, LIMITED - Proprietors.
70 Bond Street, Toronto, Canada.

ACTON BURROWS, A.Can.Soc.C.E.
Managing Director and Editor-in-Chief.
AUBREY ACTON BURROWS - Secretary and Business Manager.

Associate Editor - - - John Keir
Associate Editor - - - Donald F Keir
Mechanical Editor - Frederick H. Moody, B.A.Sc.

Canadian Advertising Representative - W H Hewitt
United States Representative - A Fenton Walker
143 Liberty Street, New York City
Representative for Great Britain - J Meredith McKim
17 Cockspur Street, London, S.W.

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TORONTO AND WEST TORONTO POSTAL DELIVERY, $1.25 a year.

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ADVERTISING COPY must reach the publishers by the 10th of the month preceding the date of publication.

TORONTO, CANADA, APRIL 1, 1913.

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Clearing Railway Right of Way of Grass, Weeds, Etc.

The Secretary of the Board of Railway Commissioners has issued the following circular to railway companies: "I am directed to call your attention to sec. 297 of the Railway Act, which provides that railway companies shall at all times maintain and keep their right of way free from dead or dry grass, weeds and other unnecessary combustible matter. On account of the large amount of rain during the summer of 1912, the growth of vegetation was unusually heavy. On this account the fire danger along railway lines is likely to be great during the early spring of 1913 and the ensuing summer, unless prompt and vigorous action is taken as required by the section above quoted. The work of burning or otherwise disposing of combustible matter on rights of way should accordingly be begun at the earliest possible date in the spring and prosecuted vigorously until completed. As required by regulation 10 of order 16570 such supervision of burning must be provided as will prevent fires from spreading beyond the strip being cleared. Experience has shown that along portions of some lines, right of way clearing can be handled satisfactorily only by the employment of extra gangs. It is essential that each company takes whatever steps are necessary to ensure prompt and efficient compliance with the requirements of the section referred to. The Board requests that you submit a statement showing what arrangements have been or will be made for handling this work on your lines."

Intercolonial Railway Extensions and Betterments.

The estimates for this year submitted to Parliament for betterments and extensions on the line include the following:—

Original construction	$ 800
Bridges, to strengthen	190,000
General protection of highways	65,000
To increase accommodation and facilities along the line	126,100
To increase water supply	41,500
Surveys and inspections	25,000
Halifax—Dock and wharves	400,000
" —Increased accommodation, etc.	111,500
" —New terminal facilities	2,500,000
Dartmouth to Deans Settlement, new branch line, on account	1,000,000
Mulgrave, increased accommodation	33,000
" new car ferry and dock	400,100
Point Tupper, improvements	90,000
Sydney Mines diversion	40,000
Truro, increased accommodation	155,000
Wallace Harbor, spur line	60,500
St. John, increased accommodation	18,000
Sussex, improvements	35,000
Moncton, locomotive and car shops, etc.	136,000
Fredericton, increased accommodation	20,000
Chatham, diversion of line	128,000
Nelson and Derby Jct.	128,000
Levis to St. Romauld, second track	173,000
Levis, improvements	160,000
Riviere du Loup, additional facilities	78,000
St. Flavie, increased accommodation	18,000

Plans have been filed at Halifax showing the land required for the rearrangement of the terminals there. The property included extends for more than a mile along the southern water front of the city to Point Pleasant Park, and westward from the harbor to Young Ave.

The other extension work for which a vote has been provided is the building of a line from Dartmouth to Deans Settlement. The Minister of Railways recently said in the House of Commons that this line had not been placed under construction because the government felt that further information, particularly as to probable traffic, was required. The late government had let a contract, which the present government had held up for consideration. The government also felt that complete surveys did not appear to have been made for the building of the proposed 24 mile line from Alva to Baddeck, for which $200,000 had been voted by the last parliament. When the tenders came in the prices were found to be too high, and no contract was let. With respect to the main line, particularly between Truro and Sydney, N.S., the bridges must be strengthened, heavier steel laid, a better alignment secured, and the gradients lowered. By spending a sufficient sum on these works the haulage power of the locomotives could be increased 50%. When there was sufficient trade to warrant it, the line would be double tracked from St. John to Halifax. It would not be long before this was necessary, and the government was willing and ready to proceed with such work as soon as the proper information was obtained, the surveys made, and the necessity proved. (Feb., pg. 83.)

Bridge Work on the Canadian Pacific Railway.

It is estimated that during last year about $10,000,000 was expended by the C.P.R. bridge department on new and old structure and a very large amount of bridge work is still in progress and proposed, exclusive of the very costly and extensive constructions that will be required soon for the proposed abolition of grade crossings in Montreal. The magnitude of the bridge work is indicated by the following summary taken from the annual report of P. B. Motley, Engineer of Bridges, for the year ended June 30, 1912: At the end of the fiscal year there were in existence 3771 bridges and open culverts. These had an aggregate length 68.69 miles. There were 25,125 culverts other than open, of which 14,032 were permanent and 11,093 of a temporary nature. During the year 778 old bridges and open culverts were replaced, aggregating 39,402 lineal feet, including 24 old iron and steel bridges, too light for present traffic, and having a total length of 2438 lin. ft. There were 923 culverts other than open and overhead bridges replaced. New bridges to the number of 109, aggregating 2.3 miles, were added. The number of temporary bridges was reduced during the year by 629, aggregating 3.89 miles.

Rates on brick from the United States to Canada:—In the matter of the investigation and suspension of advances in rates by carriers for the transportation of building brick and other articles in carloads from Orchard Park and Jewettville, N.Y., to Canadian points in which the Ellicott Brick Co., Buffalo, Rochester & Pittsburgh Ry., Michigan Central Rd., Wabash Rd., and Grand Trunk Ry., were represented. the Interstate Commerce Commission decided Feb. 3 as follows:—1. The Committee's decision in the Stowe-Fuller case, 12 I.C.C., 213, to the effect that various grades of brick should take the same rate, has no application to common brick. 2. Proposed increased rates on common or building brick from Orchard Park and Jewettville, N.Y., to Canadian points not shown to be reasonable, and tariffs under suspension required to be withdrawn.

London St. Ry.—Gross earnings for Jan., $26,646.49; expenses, $18,104.45; net earnings, $8,542.04; deductions, $2,450; net income, $6,092.04; gross earnings for Feb., $23,453.32; expenses, $16,731.68; net earnings, $6,721.64; deductions, $2,222.10; net income, $4,499.54.

Transportation Appointments Throughout Canada.

The information under this head, which is almost entirely gathered from official sources, is compiled with the greatest care, so as to ensure absolute accuracy. Anyone who may notice any error in our announcements will confer a favor by advising us.

Board of Railway Commissioners.—E. J. ZAVITZ and W. J. C. HALL have been appointed Provincial Fire Inspectors for the Board, for Ontario and Quebec respectively, for the enforcement of the Board's fire regulations as contained in order 16570. These appointments do not carry any salary from the Board. A number of fire inspectors, already employed by the Provincial Governments, have also been appointed by the Board.

Canadian Lake Line.—H. A. YOUNG, Traffic Manager, having resigned, the position has been abolished.

A. V. COLLINS, heretofore chief clerk to Traffic Manager, has been appointed General Freight Agent, in charge of all matters pertaining to traffic, rates and claims. Office, Toronto.

Canadian Northern Ontario Ry.—T. R. McLEOD, heretofore Master Mechanic, Halifax and Southwestern Ry., has been appointed Master Mechanic, Canadian Northern Ontario Ry., vice C. L. Webster. He will also have jurisdiction over the Central Ontario, Bay of Quinte, and Irondale, Bancroft and Ottawa Railways. Office, Toronto.

Canadian Northern Ry.—LEWIS LUKES, who has been in Mackenzie, Mann and Co.'s service for a number of years, in various capacities, has been appointed Assistant to the President, C.N.R. Office, Toronto.

A. GUENETTE, heretofore chief clerk and accountant, Montreal, has been appointed Freight Agent there, vice A. F. Dion, whose appointment as Traffic Manager, Quebec Harbor Commission, was announced in our last issue.

W. M. HOOD, heretofore ticket passenger agent, Pere Marquette Rd., London, Ont., has been appointed Travelling Passenger Agent, C.N.R., Toronto.

R. LOGAN, heretofore Soliciting Freight Agent, Hamilton, Ont., has been appointed Soliciting Freight Agent, Toronto.

B. H. DORLAND, heretofore chief clerk, Freight Department, Hamilton, Ont., has been appointed Soliciting Freight Agent there, vice R. Logan, transferred to Toronto.

Canadian Northern Steamships, Ltd. — W. M. HOOD, heretofore ticket passenger agent, Pere Marquette Rd., London, Ont., has been appointed Travelling Passenger Agent, C.N.S. Ltd., Toronto.

Canadian Pacific Ry.—H. A. CHANDLER is reported to have been appointed Division Surveyor, Atlantic Division, his duties including the preparation of plans and descriptions for purchases, sales and leases of land, re-surveys of right of way, and such other land survey work as comes within the jurisdiction of the Operation and Maintenance Department. Office, St. John, N.B.

D. H. RYAN, hertofore Chief Dispatcher and Trainmaster, District 1, Atlantic Division, [illegible] District 1, Atlantic Division, vice W. B. Brown, transferred. Office, St. John, N.B.

W. R. HOWARD, heretofore dispatcher, and latterly acting as Chief Dispatcher, has been appointed Chief Dispatcher and Trainmaster, District 1, Atlantic Division, vice D. H. Ryan, promoted. Office, Brownville Jct., Me.

[illegible] District 2 (Montreal) [illegible] Eastern Division, [illegible] McNEILLIE, Superintendent, have been extended to include south switch at Adirondack Jct., and west switch at Jacques Cartier Jct., Que.

G. E. FISET, A.M. Can. Soc. C.E., is reported to have been appointed Division Surveyor, Eastern Division, his duties including the preparation of plans and descriptions for purchases, sales and leases of lands, re-surveys of right of way, and such other land survey work as comes within the jurisdiction of the Operation and Maintenance Department. Office, Montreal.

A. J. BLAISDELL, heretofore General Agent, Passenger Department, Cincinnati, Ohio, has been appointed General Tourist Agent, vice C. E. Benjamin, transferred. Office, Montreal.

A. C. BRADY has been appointed Assistant Superintendent, District 2, Eastern Division, with special jurisdiction over station staffs and service. Office, Montreal.

W. B. BROWN, heretofore Assistant Superintendent, District 1, Atlantic Division, St. John, N.B., has been appointed Assistant Superintendent, District 2, Eastern Division, with special jurisdiction over the transfer, switching and train service. Office, Montreal.

E. J. MELROSE, heretofore General Yardmaster, has been appointed Assistant Superintendent, District 2, Eastern Division, in charge of operation during the night. Office, Montreal

E. G. WHITE has been appointed Assistant to the Manager, Department of Natural Resources. Office, Montreal.

A. McNAUGHTON, heretofore Secretary-Treasurer, Kingston and Pembroke Ry., Kingston, Ont., has been appointed to a position in the Accounting Department, C.P.R., Montreal.

A. P. WALKER, M. Can. Soc. C.E., heretofore Assistant Division Engineer, Ontario Division, Toronto, has been appointed Division Surveyor, Ontario Division, including the preparation of plans and descriptions for purchases, sales and leases of land, re-surveys of right of way, and such other land survey work as comes within the jurisdiction of the Operating and Maintenance Department. Office, Toronto.

G. H. DAVIS, heretofore Resident Engineer, Toronto Terminals, has been appointed Assistant Division Engineer, Ontario Division, vice A. P. Walker, transferred. Office, Toronto.

W. C. ELMER, heretofore chief clerk, City Ticket Office, Chatham, Ont., has been appointed Travelling Passenger Agent, Toronto, vice J. J. Brignall, resigned.

J. A. ERVINE has been appointed Resident Engineer, Toronto Terminals, vice G. H. Davis, promoted.

E. W. HUTCHISON, heretofore fitter, has been appointed Assistant General Foreman, West Toronto Shops, vice G. Black.

W. A. SIBBETT is reported to have been appointed Division Surveyor, Lake Superior Division, his duties including the preparation of plans and descriptions for purchases, sales and leases of land, re-surveys of right of way, and such other land survey work as comes within the jurisdiction of the Operation and Maintenance Department. Office, North Bay, Ont.

R. HUNTER has been appointed Assistant Superintendent, Sleeping, Dining and Parlor Cars and News Service, Manitoba Division, vice D. S. Fraser, promoted. Office, Winnipeg.

D. S. FRASER, heretofore Assistant Superintendent, Sleeping, Dining and Parlor Cars and News Service, Manitoba Division, Winnipeg, has been appointed Superintendent, same department, Saskatchewan Division, vice S. A. Simpson, transferred. Office, Moose Jaw.

J. L. DOUPE, formerly General Townsite Agent, Department of Natural Resources, Calgary, Alta., is reported to have been appointed Chief Surveyor for the Operating Department, Western Lines, his duties to include the surveying of new townsites in the west.

C. BAKER has been appointed Locomotive Foreman at Outlook, Sask.

S. A. SIMPSON, heretofore Superintendent, Sleeping, Dining and Parlor Cars and News Service, Saskatchewan Division, Moose Jaw, has been appointed Superintendent, same department, Alberta Division, vice E. W. Kolb, resigned. Office, Calgary.

G. WHITELEY, heretofore District Master Mechanic, Moose Jaw, Sask., has been appointed Master Mechanic, Alberta Division, vice A. T. Shortt, appointed Superintendent, Ogden Shops, Calgary, Alta., as announced in our last issue. Office, Calgary.

F. G. BANNISTER, heretofore Storekeeper, Strathcona, Alta., has been appointed General Foreman of Stores, Ogden Shops, Calgary, Alta.

We are officially advised that the press report to the effect that —. Mitchell, heretofore Park Superintendent, Lethbridge, Alta., has been appointed Landscape Gardener of the Forestry Branch of the Department of Natural Resources, C.P.R., Calgary, Alta., is merely a press rumor, as he is not employed by the Department.

G. R. BLAKE has been appointed Storekeeper at Strathcona, Alta., vice F. G. Bannister, promoted.

W. McKINTY, heretofore Building Inspector, Brocket, Alta., has been appointed Bridge and Building Master, Cranbrook, B.C., vice R. Sinclair.

L. NORMAN has been appointed Storekeeper at Kamloops, B.C., vice T. R. McSwain, resigned.

W. C. MACKENZIE, heretofore in the Audit Department, has been appointed Storekeeper at Grand Forks, B.C.

A. E. BENNETT, Locomotive Foreman at Grand Forks, B.C., has had his headquarters moved to Eholt, B.C.

J. V. MURPHY has been appointed District Passenger Agent, Nelson, B.C., vice M. E. Malone, transferred.

W. H. Evans, hertofore Road Foreman of Locomotives, District 2, British Columbia Division, Vancouver, has been appointed District Master Mechanic, District 2, British Columbia Division, his former position having been abolished. Office, Vancouver.

J. T. HAGGIN, heretofore city ticket agent, Seattle, Wash., has been appointed City Passenger Agent there, vice H. W. Edwards, resigned.

L. J. SPECK, heretofore City Passenger Agent, Western Pacific Ry., San Francisco, Cal., has been appointed City Ticket Agent, C.P.R., Seattle, Wash., vice J. T. Haggin, promoted.

G. W. WATSON, heretofore City Passenger and Ticket Agent, Detroit, Mich., has been appointed Passenger Agent, Bay City, Mich., vice F. C. Wherrett, transferred.

F. C. WHERRETT, heretofore Passenger Agent, Bay City, Mich., has been appointed Travelling Passenger Agent, Detroit, Mich., vice C. M. Harwood, transferred.

C. M. HARWOOD, heretofore Travelling Passenger Agent, Detroit, Mich., has been appointed City Passenger and Ticket Agent, Detroit, Mich., vice G. W. Watson, transferred.

Duluth, Winnipeg and Pacific Ry.—C. J. WILSON, heretofore Superintendent, District 3, Central Division, Canadian Northern Ry., Winnipeg, has been appointed Superintendent, D.W. and P.R., vice C. W. Houston, resigned. Office, Virginia, Minn.

Esquimalt and Nanaimo Ry.—W. M. STOKES has been appointed acting Resident Engineer, vice A. W. R. Wilby, Resident Engineer, resigned. Office, Victoria, B.C.

T. S. WILSON has been appointed Assistant Roadmaster, Victoria, B.C. All employes of the Road Department report to him instead of to the Roadmaster, as heretofore.

Grand Trunk Ry.—W. M. MACPHERSON, of Quebec, a director of the G.T. Pacific Ry., has also been elected a director of the G.T.R.

R. GILMOUR, heretofore General Yardmaster, Montreal Terminals, has been appointed Superintendent of Montreal Terminals, vice R. W. Scott, relieved on account of ill health.

A. KASTELLA, heretofore electrical engineer, G.T.R., Stratford, Ont., has been appointed engineer in charge of light, heat and power, G.T.R. station and Chateau Laurier, Ottawa.

C. E. HORNING, heretofore City Passenger and Ticket Agent, Toronto, has been appointed District Passenger Agent there, reporting to General Passenger Agent, Montreal, vice A. E. Duff, resigned to enter commercial life.

C. E. JENNEY, heretofore Travelling Passenger Agent, Pittsburgh, Pa., has been appointed City Passenger and Ticket Agent, Toronto, vice C. E. Horning, promoted.

W. A. MASON has been appointed Soliciting Passenger Agent, Toronto, vice A. B. Chown, promoted.

J. WALKER, heretofore Resident Engineer, Northern Division, Allandale, Ont., has been appointed Assistant Engineer, Barrie Division, Ontario Lines, and his former position has been abolished. Office, Allandale.

A. WARREN, heretofore Roadmaster, Woodstock, Ont., has been appointed Supervisor of Track, with territory from Paris Jct. to Hyde Park, and Hyde Park to Wingham Jct., London Division, Ontario Lines. Headquarters, London.

G. H. ALLEN, heretofore Roadmaster, London, Ont., has been appointed Supervisor of Track, with territory, Hyde Park to Sarnia, Petrolia Branch, Komoka to Glencoe, Kingscourt Jct. Branch, Sarnia Tunnel to Point Edward and St. Clair Tunnel, London Division, Ontario Lines. Headquarters, London.

M. J. O'LEARY, heretofore Night Yardmaster, London, Ont., has been appointed General Yardmaster there, vice J. C. Cloghesy, transferred.

W. OGILVIE has been appointed Night Yardmaster, London, Ont., vice M. J. O'Leary, promoted.

G. C. MURRAY, heretofore in Bell Telephone Co.'s service, London, Ont., has been appointed Telephone Inspector, G.T.R., Stratford, Ont.

R. WRIGHT, heetofore chief clerk, Freight Department, London, Ont., has been appointed Freight Agent at Brantford, Ont.

W. McGAR, heretofore Roadmaster, Stratford, Ont., has been appointed Supervisor of Track, with territory Fort Erie to Goderich, Paris Jct. to Lynden Jct., London Division, Ontario Lines. Headquarters, Brantford.

J. PIPER, heretofore Roadmaster, Brantford, Ont., has been appointed Supervisor of Track, with territory, Tavistock to Port Dover, Simcoe to Port Rowan, Harrisburg to Tillsonburg, Junction Cut, District 16 to Alford, B. & G. to B. & T. to Lynden Jct., London Division, Ontario Lines. Headquarters, Brantford.

D. P. DREWERY, Travelling Passenger Agent, Cortland, N.Y., has been transferred to 285 Main St., Buffalo, N.Y.

A. B. CHOWN, heretofore Soliciting Passenger Agent, Toronto, has been appointed Travelling Passenger Agent, Pittsburgh, Pa., reporting to General Passenger Agent, Montreal, vice C. E. Jenney, transferred.

Great Northern Ry.—A. H. HOGELAND, heretofore Chief Engineer, has been appointed Consulting Engineer. Office, St. Paul, Minn.

R. BUDD, heretofore Assistant to the President, has been appointed Chief Engineer, vice A. H. Hogeland. Office, St. Paul, Minn.

C. A. DUNHAM, heretofore Signal Engineer, G.T.R., Montreal, has been appointed Assistant Signal Engineer, Lake District, G.N.R., vice H. E. Brashares. Office, St. Paul, Minn.

Halifax and Southwestern Ry.—G. H. GREEN, heretofore General Foreman, Bridgewater, has been appointed acting Master Mechanic, vice T. R. McLeod, appointed Master Mechanic, Canadian Northern Ontario Ry. Office, Bridgewater, N.S.

Intercolonial Ry.—J. E. BEDFORD, heretofore charge hand painter, has been appointed Master Car Painter, Moncton Shops, vice A. S. Coleman, deceased.

Minneapolis, St. Paul and Sault Ste. Marie Ry.—J. G. SHELDRICK, heretofore Resident Engineer, Superior, Wis., has been appointed Division Engineer there.

New York Central and Hudson River Rd. M. A. DOW has been appointed General Safety Agent, reporting to the General Claims Attorney and to the General Manager, vice G. Bradshaw, resigned. Office, New York, N.Y.

New York Central Lines.—A. H. SMITH, heretofore Vice President, has been appointed Senior Vice President, N.Y.C. & H.R.R. and its leased lines, L.S. & M.S.R., T. & O.C.R., Z. & W.R., L.E. & W. Rd., C.I. & S. Rd., C.C.C. & St. L.R., P. & E.R., C.N. Rd., M.C. Rd., P. & L.E. Rd., R. Rd., O. & N.Y.R., and I.H.B. Rd. He will, under the direction of the President, have general charge of the property and business of these companies, and will perform such duties as may be assigned to him by the Board of Directors, the Executive Committee or the President. Office, New York.

A. T. HARDIN, heretofore Assistant Vice President, has been appointed Vice President, N.Y.C. & H.R. Rd. and O. & N.Y.R., in charge of operation, maintenance and construction. Office, New York.

J. J. BERNET, heretofore Assistant Vice President, Lake Shore and Michigan Southern Ry., Chicago, Ill., has been appointed Vice President, L.S. & M.R., L.E. & W. Rd., C.C.C. & St. L.R., P. & E.R., C.N. Rd., M.C. Rd., T. & O. C.R., Z. & W.R., C.I. & S. Rd., and I.H.B. Rd., in charge of operation, maintenance and construction. Office, Chicago, Ill.

Pere Marquette Rd.—W. M. HOOD having resigned as Travelling Passenger Agent, London, Ont., the position has been abolished, and the office closed.

Richelieu and Ontario Navigation Co.—Full particulars of the changes in the official organization will be found in the Marine Department on page 193 of this issue.

Wabash Rd.—T. O'CONNELL, heretofore Contracting Freight Agent, has been appointed Travelling Freight Agent, vice S. C. Lockman, promoted, reporting to Division Freight Agent, Detroit, Mich. Office, Detroit.

C. H. Gaunt, General Manager, Western Union Telegraph Co., was on a tour of the company's system recently, and visited Victoria and Vancouver, inspecting the company's stations there and in the neighborhood.

Great Northern Railway Lines in Canada.

The Midland Ry. Co. of Manitoba has been authorized by the Manitoba Legislature to increase its capital stock from [illegible] to [illegible].

U. S. press reports state that it is likely that work will be started this year on a line from Neche, N.D., to Winnipeg, Man.

Vancouver, Victoria and Eastern Ry. and Navigation Co.—In an interview at Hope, B.C., Feb. 25, J. H. Kennedy, Chief Engineer, is reported to have stated that construction would be started there June 1.

The British Columbia Legislature re-amended the description of the lands mentioned in the False Creek Confirmatory Act of 1911 conveyed by the City of Vancouver to the V.V. and E.R. and N. Co.

The Board of Railway Commissioners has authorized the construction of a transfer track connecting with the C.P.R. near Hawkes Ave., Vancouver. (Feb., pg. 75.)

Dominion Government Railway to Hudson Bay.

We are officially advised that negotiations are in progress with the Department of the Interior for the necessary land for terminals at Pas, Man. The plans for these terminals are being prepared by the engineers, but they will not be ready for some time. Referring to the proposed terminals press reports state that the passenger station will occupy an entire block, and that the freight shed and locomotive house will adjoin the freight yards on which 10 tracks will be laid, with accommodation for 100 cars on each.

The question of harbor construction at the Hudson Bay terminal is under consideration. H. T. Hazen, who spent the winter at the Bay, having arrived at Ottawa to consult with the Minister on the matter. The problem of finally selecting a harbor, the Minister recently stated, is a difficult one, as there is much to say for and against both Port Nelson and Fort Churchill as sites. (Feb., pg. 77.)

Railway Route Maps Approved

The Minister of Railways has approved the following railway route maps:—

Canadian Northern Branch Lines Co., Feb. 26, Canora to Hudson Bay Jct., Sask., revision of line from Sturgis northerly for 21.09 miles.

Canadian Pacific Ry., Feb. 26, revision of Lanigan to Prince Albert Branch, 117.14 miles.

Grand Trunk Pacific Branch Lines Co., Feb. 26, Canora to Etoimami, Sask., revision of line between tp. 39, r. 3, and tp. 34, r. 5, w. 2 m., about 28 miles.

Lake Erie and Northern Ry., Mar. 5, from Brantford to Galt, Ont., about 21 miles.

Michigan Central Rd. Tunnel Taxation.—The Ontario Railway and Municipal Board, in the appeal of the M.C.R. against the assessment of the city of Windsor, Ont., of $2,500,000 on the Detroit River tunnel, has decided that the property is not assessable under the section of the Railway Act which states that a company assessed under that act shall be exempt from municipal taxes, had previously agreed to pay taxes on an assessment of $444,444 on the tunnel.

B. S. Jenkins, General Superintendent of Telegraphs, C.P.R., Winnipeg, was presented recently, with an engraved cane, and a cut glass set for Mrs. Jenkins, on the occasion of the removal of the offices to new quarters in Empress Block.

Traffic Orders by the Board of Railway Commissioners.

The dates given for orders are those on which the hearings took place, and not those on which the orders were issued:—

B. C. Electric Railway's Freight Tariff.

18629. Feb. 3. Re application of British Columbia Electric Ry., under section 328 of the Railway Act, for approval of its Standard Freight Tariff of Maximum Mileage Rates, C.R.C. 1, to apply between stations on the Vancouver & Lulu Island Ry. and the Vancouver, Fraser Valley & Southern Ry.:—It is ordered that, pending the Board's decision in the inquiry into rates charged generally by railway companies in British Columbia, the company's said tariff be approved.

B. C. Electric Railway's Passenger Tariff.

18652. Feb. 4. Re application of British Columbia Electric Ry., under sec. 331 of the Railway Act, for approval of its Standard Passenger Tariff of Maximum Mileage Tolls, C.R.C. 1, to apply between stations on the Vancouver & Lulu Island Ry. and between stations on the Vancouver, Fraser Valley & Southern Ry.:—It is ordered that, pending the Board's decision in the inquiry into rates charged generally by railway companies in British Columbia, the company's said tariff be approved, subject to the condition that the lower tolls already approved between certain stations of the Vancouver, Fraser Valley & Southern Ry. be not advanced without the Board's approval.

G.T.P.R. Standard Freight Mileage Tariff.

18680. Feb. 11. Re application of Grand Trunk Pacific Ry., under sec. 327 of the Railway Act, for approval of its Standard Freight Mileage Tariff, C.R.C. 14, to apply over its lines between Edmonton, Alta., and Tete Jaune, B.C., inclusive:—It is ordered that the said tariff be temporarily approved, pending the result of the Board's inquiry into rates charged generally by railway companies west of and including Crowsnest, Canmore and Thornton.

Rates on Lumber to Eastern Manitoba.

18773. Feb. 20. Re complaint of G. R. Scruton, of Beausejour, Man., that rates charged by the C.P.R. on lumber and shingles from British Columbia points, and on lumber from Keewatin, Ont., to Beausejour are excessive and discriminatory as compared with rates charged from the same points to Winnipeg:—It is ordered that the Canadian Pacific, the Canadian Northern, and the Grand Trunk Pacific Railway Companies be required to reduce the local and joint rates on lumber, and on other commodities carried at the lumber rates, from shipping points west of and including Blairmore, Alta., and Laggan, Alta., to points east of the Red River, as shown in the special joint tariffs published and filed, so as to graduate less abruptly from the Winnipeg basis to the maximum basis west of Lake Superior, and that in so doing, the rates to Molson, Man., and to intermediate points on the company's Kenora and Lac du Bonnet subdivisions, also to Giroux, Man., on the Canadian Northern Ry., and Hazel, Man., on the G.T.P. Ry., be reduced so as not to be higher than 2c. per 100 lbs. over and above the respective rates to Winnipeg on the said commodities; the said reduced rates to be published and filed so as to become effective not later than April 1, 1913. The complaint with respect to the rate from Keewatin is dismissed.

Lumber Rates from Mountain Shipping Points.

18771. Feb. 19. Re application of Mountain Lumber Manufacturers' Association for an order (1) compelling the publication of rates on lumber from the so-called mountain shipping points to all stations in Alberta, Saskatchewan, and Manitoba, where the mileages involved do not exceed those to Winnipeg, to 33c. per 100 lbs.: and (2) requiring that the rates from Golden, B.C., to prairie destinations be the same as those applying from Crowsnest where the mileages involved from Golden do not exceed those from Crowsnest: 1. The Canadian Pacific, Canadian Northern, and Grand Trunk Pacific Railway Companies are required to adjust the special joint tariffs filed so that, without increasing any rates shown therein, the rates on lumber, and on other commodities carried at the lumber rates, from shipping points west of and including Blairmore, Alta., and Laggan, Alta., to Winnipeg shall not be exceeded for similar or less distances from the same shipping points to points in Alberta, Saskatchewan, and Manitoba; the companies to have leave reasonably to grade up the local and joint rates for distances greater than those to Winnipeg; the schedules to give effect to this order to be filed so as to become effective by April 1, 1913. 2. The disposition of the application for a reduction of the rates from Golden, B.C., to prairie destinations, as applied for, is reserved pending the Board's decision in the inquiry now being made into the western freight rates generally.

Rates on Wire Fencing, Etc.

18775. Feb. 22. Re application of Montreal Board of Trade, under sec. 315 of the Railway Act, for an order directing the G.T.R. and C.P.R. to equalize their rates on wire fencing and wire netting, also staples and wire gates, in carloads, from Montreal to Ontario points, on a basis similar to that prescribed by order 6844, April 6, 1909, in the application of the Canadian Freight Association:—It is ordered that the G.T.R. and C.P.R. be required to file, so as to become effective by April 1, 1913, commodity rates on wire fencing and wire netting, in carloads (including staples and wire gates, when forming part of the said carloads), from Montreal on the following basis:—To Sarnia, Walkerville, Woodstock, Hamilton, and Toronto at the rates charged from those points to Montreal under the commodity tariffs filed; to Port Hope and Peterboro at the rate charged for approximately the same distance from Toronto to Cornwall, and to Kingston and Sharbot Lake at the rate charged thereto from Toronto; rates to be provided to those points west of Kingston and Sharbot Lake and east of Toronto which are provided with commodity rates from Toronto, also to all points south of the G.T.R. main line between Toronto and Sarnia, in reasonable proportions to the basing rates specifically prescribed above; the said basing rates to be the maxima to intermediate points on the direct lines.

Pulpwood Tariffs in Eastern Canada.

18787. Feb. 27. Re application of International Paper Co. and others, under sec. 323 of the Railway Act, for an order disallowing the tariffs of the Canadian Pacific, Grand Trunk, Canadian Northern, and Temiscouata Railway Companies, namely, C.R.C. no. 2424, C.R.C. no E. 2500, C.R.C. no. E. 131, and C.R.C. no. 203, respectively, increasing rates on pulpwood from Ontario, Quebec, and New Brunswick to Eastern United States points, published and filed to become effective September 1 and 2, 1912; and reinstating the present rates of the railway companies:—It is ordered—1. The application is refused. 2. Subject to the condition that the rates from C.P.R. stations west of Avonmore to and including Smiths Falls, in effect at the date of this order, be restored,—the said tariffs of the railway companies, increasing the rates on shipments of pulpwood, in carloads, are allowed; provided that such increases shall not become effective before Aug. 15, 1913.

Transportation of Apples.

18825. Mar. 5. Re application of Simcoe Fruits, Limited, of Barrie, Ont., for order restoring the arrangement in effect prior to Mar. 29, 1911, whereby apples (green) carried by the railways in less than carload lots for aggregation into carload reshipments, received, on reshipment, a reduction of one-third from the inwards less than carload rates; or, as an alternative, for the application of the through carload rate, subject to the minimum carload weight, from the original shipping point to the final railway destination, plus a reasonable charge ($3 a car suggested) for the stopover at the intermediate point of consolidation, with the privilege of inspection and repacking thereat; and re the application of the Fruit Growers' Association of Ontario, for an order directing the railway companies (a) to accept and forward part carloads of fruit at the carload rate, subject to the carload minimum weight, from the original shipping point to the final railway destination, to be stopped in transit for completion of the carload at an additional charge of $3 a car for each such stop; (b) for the carriage of fruit, to furnish refrigerator cars equipped with rack or slatted floors, so as to ensure free circulation of cold or warm air; (c) to reimburse the cost of such rack or slatted floors when they have to be furnished by shippers themselves; and (d) to reimburse the cost of the slatted floors and paper linings necessary to adapt box cars for this traffic when the railway companies are unable to furnish refrigerator cars on reasonable notice: It is ordered 1. That the applications for the stopover privilege for completion of carload shipments in transit, at an additional charge of $3 a car for each such stop, be refused. 2. That the railway companies re-establish the arrangement formerly in effect, whereby apples were carried to concentration points for storage, inspection, or for completion of carloads and reshipment, subject to certain conditions, at a reduction of one third from the local tariff rates, to the concentration points, so as to become effective within 30 days from the date of this order. 3. That the Grand Trunk, Grand Trunk Pacific, Canadian Pacific, and Canadian Northern Railway Companies notify the Board, not later than April 15, 1913, what number of their, and each of their, refrigerator cars in service are supplied with slatted floors, and what number are not.

Classification of Paraffine Wax.

18833. Mar. 8. Re order 18581, Jan. 21, 1913, directing the addition of paraffine wax to the "chemicals" list in the first supplement to be issued to Canadian Freight Classification 16:—Upon its appearing from the report of the Chief Traffic Officer that the proof of the said supplement has not yet been submitted for the Board's approval, and that in all probability there will be considerable delay before the same can be approved and made effective. It is ordered that order 18581 be amended to provide that its requirements be complied with by the issue of a separate supplement to be made effective not later than Mar. 24, 1913.

The Montreal Tramways Co. has received 6 steel frame car bodies from the Canadian Car and Foundry Co.

National Transcontinental Railway Construction.

The Dominion Parliament has passed an act extending for one year, the time within which the line is to be completed. It is also being asked to vote $19,000,000 on account of construction and $3,000,000 on account of the building of the bridge over the St. Lawrence at Quebec.

A contract is reported to have been let by M. P. and J. T. Davis, general contractors, for the Levis-New Brunswick boundary section, 130 miles, to W. Daly, Montreal, for the completion of work on the section. There is about nine miles of track to be laid, and some bridging is to be done, and there is also a good deal of ballasting and the general finishing up. It is expected that the work will be completed by Sept. 30.

Tenders are under consideration for the supply of 1,732 long tons of 80 lb. steel rails for delivery, June 1 at St. Anselme, Que., and 4,349 long tons of 80 lb. steel rails for delivery June 1 at Harvey Jct., Que. (Feb., pg. 82.)

Grand Trunk Pacific Railway Construction.

The Dominion Parliament has passed acts granting an extension of time for the construction of the main line and branches of the G.T.P. Ry., and of the various lines of the G.T.P. Branch Lines Co., and authorizing the Dominion Government to purchase at par the company's bonds at present unissued and subject to the "implementing" clauses of the guarantee agreement.

Construction on the main line is being proceeded with between the end of steel at Rau Shuswap River, B.C., 1,123 miles west of Winnipeg, and at mileage 195 east of Prince Rupert. The work has been in progress westerly to Fort George and easterly to the Enderka River, leaving about 140 miles on which no work has been done. The general contractors, Foley, Welch and Stewart, are reported to have let subcontracts for grading, etc., on this mileage in sections to Carlton, Griffin, Burns and Jordan; John Bostock; Stuart Bros.; Duncan Ross; M. Sheedy; H. McLeod; and Feilburg and Stone. It is also reported that a contract has been let to Bates, Rogers and Co., Spokane, Wash., for the bridge construction on the line from mileage 1,094 to 1,486 west of Winnipeg, at a cost of about $2,000,000. The bridge work is said to include the following structures:—McLellan Creek crossing 249 ft. long; Little Shuswap crossing 129 ft.; Rau Shuswap crossing 1,032 ft.; Cottonwood Creek crossing 129 ft.; Fifty Mile River crossing 129 ft.; Goat River crossing 308 ft.; Dome Creek crossing 129 ft.; Second Fraser River crossing 689 ft.; Third Fraser River crossing 968 ft.; Willow River 459 ft.; Fourth Fraser River crossing 1,227 ft.; Upper Nechaco River crossing 642 ft.; Bulkley River crossing mile 1,481, 154 ft., and crossing the same river at mile 1,486, 364 ft.

Press reports state that an arrangement has been made with the Canadian Northern Ry., under which the G.T.P. Ry. will build a second track for 12 miles from about 20 miles west of Yellowhead Pass, to be used jointly by the two companies.

[illegible] programme for the current year, it is reported, embraces the completion of the various branch lines on which work was in progress in 1912. These include:—The line from Harte to Brandon, Man., in respect of which it is reported that a contract for the bridges has been let to the Hyland Navigation and Trading Co. The completion of the line from Regina to the International Boundary to a junction with the Great Northern Ry. Noble Branch, on which about two miles of track has yet to be laid. The branch into Weyburn from this line will also be completed. Work will be done on laying out terminals in Moose Jaw, and it is reported that connection will be made via the Moose Jaw line with Swift Current. Ballasting and other finishing up work will be done on the branch to Battleford. The most important line which will be completed is that from Tofield to Calgary, Alta. The grading has been completed into Calgary, and the tracklaying was expected to be completed close to the city by Mar. 31. Steel bridges are being erected over the Elbow and Bow Rivers, and until these are completed the line will not be opened. It is expected that this work will be done and the line be ready for operation by Aug. 31. A connection will be made with Lethbridge at a later date, but the proposed line from Calgary to Coutts has been abandoned, according to a recent statement by President E. J. Chamberlin. The Alberta Coal Branch from Bickerdike is in operation to mileage 56.4 A branch line is reported to be under construction to the Yellowhead Coke Co.'s mine and to the Mountain Park mine. On this latter line track is reported to have been laid to five miles west of Edson. (Feb., pg. 82.)

Birthdays of Transportation Men in April.

Many happy returns of the day to—

F. T. Anderson, Car Service Agent, C.P.R. Western Lines, Calgary, Alta., born at Lambeth, Ont., April 1, 1878.

W. H. Ardley, General Auditor, G.T.R., Montreal, born at London, Eng., Apr. 24, 1858.

Jas. Black, Freight Claim Agent, C.P.R.. Vancouver, B.C., born near Seaforth, Ont., Apr. 19, 1858.

C. G. Bowker, General Superintendent, Eastern Lines, G.T.R., Montreal, born at Medford, N.J., Apr. 21, 1871.

S. P. Brown, M. Am. Soc. C.E.. M. Am. Soc. M.E., Chief Engineer, Canadian Northern Montreal Tunnel and Terminal Co., Montreal, born at Dover, Me., Apr. 29, 1877.

W. J. Camp, Assistant Manager Telegraphs, C.P.R., Montreal, born at Oakville, Ont., Apr. 22, 1855.

G. Cobb, Superintendent, Reid Newfoundland Co., St. John's, Nfld., born at Coupar Angus, Scotland, Apr. 21, 1885.

A. E. Edmonds, District Passenger Agent, C.P.R., Detroit, Mich., born at Woodstock, Ont., Apr. 8, 1866.

J. H. Flock, K.C., Honorary Counsel, Canadian Ticket Agents' Association, London, Ont., born at Toronto, Apr. 6, 1834.

B. C. Gesner, Moncton, N.B., formerly Air Brake Inspector, I.C.R., now Eastern Sales Agent, Galena Signal Oil Co., born at Cornwallis, N.S., April 23, 1859.

J. Murray Gibbon, Advertising Agent, C.P.R., London, Eng., born at Udewella, Ceylon, Apr. 12, 1875.

V. A. Harshaw, Superintendent, District 2, Atlantic Division, C.P.R., Woodstock, N.B., born at Mono, Ont., Apr. 26, 1865.

A. Hatton, Superintendent of Car Service, Western Lines, C.P.R., Winnipeg, born at London, Eng., Apr. 12, 1869.

J. M. Horn, District Freight Agent, Canadian Northern Ry., Edmonton, Alta., born at Allanton Mills, Lanarkshire, Scotland, Apr. 12, 1880.

B. S. Jenkins, General Superintendent, C.P.R. Telegraphs, Winnipeg, born Apr. 8, 1859.

J. H. Johnston, Superintendent of Bridges and Buildings, Eastern Lines, G.T.R., Montreal, born at Uxbridge, Ont., Apr. 22, 1860.

J. Kyle, Master Mechanic, Western Division, Canadian Northern Ry., Edmonton, Alta., born at Toronto, Apr. 11, 1877.

D. McNicoll, Vice President, C.P.R., Montreal, born at Arbroath, Scotland, Apr. 7, 1852.

P. Mooney, General Freight and Passenger Agent, Halifax and South Western Ry., Halifax, N.S., born at St. Catherines, Que., April 19, 1871.

J. O. Norrie, Travelling Passenger Agent, C.P.R., Atlantic Steamship Lines, Winnipeg, born at Belfast, Ireland, Apr. 20, 1879.

G. D. Perry, General Manager, Great North Western Telegraph Co., Toronto, born at Whitby, Ont., April 19, 1858.

R. A. Pyne, Superintendent of Shops, C.P.R., Winnipeg, born at Toronto, April 10, 1874.

R. S. Richardson, Superintendent, Macdonnell & O'Brien, contractors, National Transcontinental Ry., La Tuque, Que., born at Napanee, Ont., April 9, 1865.

F. Rioux, Assistant to the President, Reid Newfoundland Co., St. John's, Nfld., born at Trois Pistoles, Que., Apr. 18, 1867.

W. A. Ritchie, District Superintendent, Pullman Co., Montreal, born at Edinburgh, Scotland, Apr. 13, 1854.

E. W. Smith, Superintendent, Dining and Parlor Car Service, G.T.R., Toronto, born at North Bridge, Mass., Apr. 21, 1869.

W. S. Tilston, Chief of Montreal Board of Trade Transportation Bureau, born at Manchester, Eng., Apr. 14, 1877.

W. Wainwright, Vice President, G.T.R., and G.T.P.R., Montreal, born at Manchester, Eng., Apr. 30, 1840.

W. Woolatt. Walkerville, Ont., ex-General Superintendent, Buffalo Division, Pere Marquette Rd., born at Weedon, Hertfordshire, Eng., Apr. 2, 1855.

C.P.R. Main Line Diversion in the Selkirk Mountains.

Tenders will be received to April 15 for the construction of a diversion of the C.P.R. main transcontinental line starting from mile 69, Mountain Subdivision, which is one mile west of Six Mile Creek, B.C., and ending at mile 92, two miles west of Cambie, mileage 89 on the new line.

We are officially advised that the grades on the present line from mile 69 to 84 are plus 2.2% compensated; from mile 84 to 85 at the summit, Rogers Pass, they average plus 0.5%, and from mile 85 to 92 they are minus 2.2% compensated. On the new line the grades from mile 69 to 75¾ will be 1% compensated; from mile 75¾ to 76½ plus 0.5%, from mile 76½ to 81½ plus 2.2% compensated, from mile 81½ to 86½ plus 1%, from mile 86½ to 86¾ minus 0.10%, from mile 86¾ to 87½ minus 0.50%, and from mile 87½ to 89 minus 2.2% compensated.

On the new line the summit will be lowered 533 ft. and the distance shortened 3 miles, and the curvature reduced by 2,356 degrees. There will be 4½ miles of snowsheds and 2,260 ft. of steel bridges eliminated.

There will be a double track tunnel, 28,000 ft. long, on tangent with plus 1% grades from the east portal for five miles, and a minus 0.1% grade to the west portal for 1,600 ft. Where found necessary it will be lined with concrete.

F. F. Busteed, Kamloops, B.C., is engineer in charge of second track work between Calgary and Vancouver. J. G. Sullivan, Winnipeg, is Chief Engineer.

Canadian Northern Railway, Construction Betterments, Etc.

Canadian Northern Montreal and [illegible] that about a mile and a half [illegible] under Mount Royal, Montreal, have been completed. An injunction was obtained, [illegible] passes under his property, under the old civil code which sets out "Ownership of the soil carries with it ownership of what is above and what is below it." An arrangement was, however, arrived at under which work was resumed.

The Board of Railway Commissioners has approved, subject to terms to be fixed, of revised location of the projected line from St. Catherine St. to St. Antoine St., Montreal.

Montreal-Ottawa-Port Arthur Line.—It is reported that grading has been so far advanced on the various sections of this line that there is a probability of steel being laid between the present track end west of Sudbury and the present track end east of Port Arthur by the fall.

Canadian Northern Ontario Ry.—Track is reported to have been laid on the Toronto-Ottawa line between Chaffey's Locks and Lombardy, and that only about seven miles of tracklaying is required to complete the line.

In connection with the building of the [illegible] company is asking for the incorporation of Leaside, or its annexation to the city. The Board of Control was informed, Mar. 5, that a car building plant and other industries will be established there. The plans for an entrance to the yards on Eastern Ave. have been filed with the Toronto City Council. The line connects with the Ottawa-North Toronto line at the junction with the C.P.R. just outside the city, crossing the Don River, paralleling the C.P.R. to Winchester St., crossing the C.P.R. and parallel to the Don River, to south of Queen St., then across the river to Eastern Ave.

Canadian Northern Ry.—Hugh Sutherland, Executive Agent, in an interview at Winnipeg, Mar. 13, is reported as stating that no further development plans will be considered until the financial conditions are improved. All that will be done will be the completion of work already in hand, for which the money had been provided.

The Canadian Northern Coal and Ore Docks [illegible] proposes to build a new dock at Port Arthur, Ont., east of the present one, to be [illegible] with storage sheds and loading pockets.

It is reported that a new station, to cost about $50,000, will be built on Victoria Ave., Fort William, Ont., this year.

[illegible] build a branch from mileage 111.89 on the Oak Point branch, in Manitoba, through sections 29, 32 and 33, tp. 26, and sections 16, 15 and 22, tp. 27, range 7 west principal meridian.

The Minister of Railways has approved a [illegible] line of the Canadian Northern Branch Lines Co. from Canora to Hudson Bay Jct., Sask.

The Alberta Legislature, Mar. 15, authorized the building of the following lines under guarantee of bonds:—From Taber to Consort; from Medicine Hat to a junction with the Saskatoon-Calgary line; from range 12 to 14 of last mentioned line, northerly to the main line in ranges 6 to 9, and northeasterly to the eastern boundary of Alberta; from Merking Creek, on the Vegreville-Calgary line to Wetaskiwin, thence by Pigeon Lake to the Edmonton-Pincher Creek line; from Cardston to the western boundary of the province, and from Drumheller, on the Vegreville-Calgary line, to Carbon.

Grading has been completed on the branch line out of Macleod as far as Fishburn, Alta., [illegible] right of way is being purchased westward of Fishburn. Construction gangs are being taken in to Pincher Creek, which will be the centre of work during the year.

An arrangement is reported to have been made with the G. T. Pacific Ry. for the building of a second track on its line for about 12 miles along the shore of Moose Lake, about 20 miles west of Yellowhead Pass, in order to avoid engineering difficulties in the way of building a second line.

Canadian Northern Pacific Ry.—The British Columbia Legislature has authorized the company to construct or acquire railway yards, terminals, wharves, shops and works, connecting lines, telegraph and telephone lines, hotels, etc., and to carry on any business incidental thereto. A second act confirms an agreement made with the Vancouver City Council for the laying out of terminals at False Creek, the Canadian Northern Ry. being a party thereto. A third act authorizes the guaranteeing by the province of $10,000,000 of 4½% bonds, in aid of the laying out of terminals at Port Mann, including the tunnel approaches, Victoria, Steveston, and at Union Bay on Vancouver Island. A fourth act authorizes the building of the following lines:—From the north end of the Westminster bridge to Vancouver, 11 miles; from the north end of Westminster bridge to Steveston, 15 miles; and from near Victoria to Union Bay, 18 miles, and the province is authorized to guarantee the company's bonds for $35,000 a mile to aid in the building of the same.

Grading has been completed on the main line between Yale and Kamloops, and the bridge work is well advanced. Track was expected to be laid into Yale by Mar. 31, and tracklaying was expected to be started westerly from Kamloops early in April. Fourteen station buildings are to be erected between Port Mann and Yale during the summer. About 85% of the grading from Kamloops east to the B.C. boundary is reported to have been completed, and according to some reports it is expected to have the greater part of the steel laid this year. A [illegible] of the terminal and bridge work, however, will not be completed until the end of 1914.

The right of way for the line on Lulu Island has been cleared, and grading was [illegible] Mar. 6 by C. R. Schacht, who is reported to have received a subcontract for five miles.

The bylaw confirming the agreement between the company and the city of Vancouver was voted on by the taxpayers Mar. 15, and approved by 5,032 votes to 1,485. (Mar., pg. 119.)

New Train Service on Grand Trunk Pacific Ry.—A Winnipeg press [illegible] says:—General Passenger Agent Hinton, of the G.T.P., announces six new daily trains, to be run each way, this summer as follows:—Winnipeg and Fort William, starting June 1; Regina, Moose Jaw and end of steel, starting Aug. 1; Calgary and [illegible], starting Aug. 1; Brandon branch from Harte, starting Aug. 1; Regina to [illegible], starting Aug. 1; Battleford to Oban, starting June 1.

Recent Provincial Legislation

Acts affecting transportation interests were passed at the recent sessions of Provincial Legislatures as follows:—

BRITISH COLUMBIA.

Canadian Northern Pacific Ry.—Amending the original act of incorporation of 1910; confirming an agreement between the company, the C.N. Ry. Co., and the city of Vancouver; providing for the extension of the company's lines and granting aid towards their construction, and granting aid for construction of terminals.

Esquimalt and Nanaimo Ry.—Authorizing issuance of Crown grants of certain lands.

False Creek.—Amending act relating to reclamation of False Creek, Vancouver, and amending the False Creek Confirmatory Act. These affect the Canadian Northern Pacific Ry. and the Great Northern Ry.

Pacific Great Eastern Ry.—Two acts amending act of incorporation of 1912.

Railway Act.—Amending Railway Act.

MANITOBA.

Intermarine Ry. and Navigation Co.—Incorporation.

Lake Winnipeg and Nelson River Ry.—Incorporation.

Midland Ry. of Manitoba.—Extending time for construction.

Portage Radial Ry. and Canal Co.—Incorporation.

Public Utilities Act.—Amending original statute.

Railway Act.—Amending Railway Act.

Winnipeg Electric Ry.—Respecting company's powers.

Recent Dominion Legislation.

The first lot of measures receiving the Royal assent at the current session of the Dominion Parliament includes the following affecting transportation interests:—

Alberta Central Ry.—Extending time for construction.

Alberta Ry. and Irrigation Co.—Amending company's powers.

British Columbia Southern Ry.—Extending time for construction.

Burrard Inlet Tunnel and Bridge Co.—Extending time for construction and increasing bonding powers.

Campbellford, Lake Ontario and Western Ry.—Extending time for construction.

Canada Shipping Act.—Amending various provisions.

Collingwood Southern Ry.—Extending time for construction.

Grand Trunk Pacific Ry.—Extending time for construction; amending financial provisions, and extending time for construction of lines to be built by the G.T.P. Branch Lines Co.

Grand Trunk Ry.—Amending various provisions.

Kootenay and Arrowhead Ry.—Extending time for construction.

Manitoba and Northwestern Ry.—Extending time for construction.

Montreal Harbor Commission.—Respecting powers of commissioners.

Montreal, Ottawa and Georgian Bay Canal Co.—Extending time for construction.

National Transcontinental Ry.—Extending time for construction.

Ontario-Michigan Ry.—Extending time for construction.

Ottawa, Northern and Western Ry.—Extending time for construction.

Ottawa Terminals Ry.—Extending time for construction.

Simcoe, Grey and Bruce Ry.—Extending time for construction.

Wetaskiwin, Yellowhead and Pacific Ry.—Incorporation.

Grand Trunk Railway Betterments, Construction, Etc.

Southern New England Ry.—The special committee appointed by the Rhode Island Legislature to consider the company's application for a guarantee of $6,000,000 of bonds to complete the line under construction to Providence has reported against the proposal. M. M. Reynolds, Vice President, G.T.R., is reported to have stated in an interview at Providence, Mar. 13, that every effort to obtain the money has failed, and that under no circumstances could the G.T.R. secure it unless with the guarantee of the State.

Ontario Terminals Ry.—The Dominion Parliament has extended the time within which the company may complete the laying out of the terminals at Ottawa.

Black Rock Terminals, etc.—The Buffalo, N.Y., Park Commissioners have under consideration an application from the G.T.R. through the International Bridge Co., for the right to use certain properties on Porter Square for building a new station.

Toronto Grade Separation.—The first section of the railway grade separation work at Toronto has been practically completed. This consists of 4.5 miles from Mimico, through South Parkdale, and is entirely a G.T.R. work. It has already been fully described in these columns.

London Terminals.—Recent press reports from London, Ont., state that it is expected work will be started this spring on the rearrangement and extension of the company's terminals there. The dispatch reports H. E. Whittenberger, General Superintendent Ontario Lines, as stating that a considerable area of land has been purchased in the esat end of London for yard extension, and that six new tracks will be laid at once.

London to Windsor, Ont.—In connection with the relaying of the track with 100 lb. steel, large quantities of new rails are being distributed west of Strathroy to Windsor, and other preliminary work is being done. The work will be rushed to a completion as speedily as possible. (Feb., pg. 71.)

Additions to G.T.R. Point St. Charles Shops.

Several additions have been made recently, or are nearing completion, to the buildings of both the G.T.R. motive power and car departments at Point St. Charles, Montreal. Along the north side of the locomotive machine shop, a brick addition, 150 by 40 ft., has been completed, and with the additional space provided, it is expected that a better grouping of the machine tools will be possible, as the old shop was very cramped. The new section has had a cement floor laid, and in the older section, as the machines that are to be rearranged are moved, a cement floor will also be laid, a section at a time, so as not to interfere with the progress of the locomotive work. The boilers in the locomotive department boiler house are being replaced with more modern boilers.

The car department is undergoing more extensive changes. To the east end of the freight car shop a 7 track addition, 130 ft. wide by 170 ft. long, the full width of the old shop, has been added. This addition is of wood, like the old shop, but of more modern construction. The roof is about half as high again as in the old shop, giving greater head room. Through the whole of the freight car shop it is the intention to have adjustable scaffolding constructed along the sides of the tracks. A 200 foot section of the south wall of the old freight shop has been knocked out, and a leanto building, 40 ft. wide, built along that length. This section is to house the locomotive department carpenter work, such as pilots, cabs, etc.

An exhaust fan system is being installed in both the freight and passenger car wood shops for the removal of the shavings, etc., to the car department boiler house. This system will consist of one 70 in. double, two 70 in. single, and one 60 in. double exhaust fans, all delivering to the boiler house.

The passenger car shop is not being added to, but on each side of every shop track there has just been constructed an adjustable scaffolding system, for convenience in working on the sides of cars.

The car department blacksmith shop, heretofore a round building, 50 ft. diameter, has been extended by an addition to the east, the full width of the former building, making the complete building 130 ft. long. This will provide much needed room, in which will be installed a bulldozer, steam hammer, and additional forges.

The car department power house is undergoing extensive changes. All the machinery in the car department is being changed over from line to individual motor drive, necessitating conversion of the power units. Power for the Montreal and Southern Counties Ry. is generated in this station. The main 600 volt generator for this service will be left as before. Up to the present there has been an additional 500 h.p. unit for this service, held principally in reserve. This engine has been rebored, and the 600 volt generator on it replaced by a 250 volt machine for supplying power for the variable speed individual drive motors throughout the shops. The 600 volt generator from this machine is being added to the old 450 h.p. line shaft engine, and will be held as a reserve for the M. and S.C. Ry. A new 16 by 26 by 25 by 16 by 18 in. air compressor, with a capacity of 1,500 cu. ft., has also been installed in the power house.

Railway Finance, Meetings, Etc.

Buffalo and Lake Huron Ry.—The report for the half year ended Dec. 31, 1912, presented at the general meeting of shareholders at Liverpool, Eng., Mar. 5, shows that the available balance, including the amount brought forward from the previous half year, was £15,069 14s. 5d., from which a dividend of 5s. 3d. a share was declared, absorbing £13,784 13s. 3d., leaving a balance of £1,285 1s. 2d. to be carried forward to the current half year. The directors have decided to write up their investments to full market value, and debit the balance sheet with the surplus thus created, under the heading of investments reserve account. T. Lindley was elected a director in place of J. M. Synge, deceased. The line is operated under lease by the G.T.R.

Canadian Northern Ry.—A lease of rolling stock from the Imperial Rolling Stock Co., to the C.N.R., dated Mar. 1, and numbered Series F. 1, has been deposited with the Secretary of State at Ottawa. Bonds to cover the rolling stock in this lease are being offered by W. A. Reid and Co., Philadelphia, Pa., to the amount of $4,000,000, bearing 4½ per cent. interest. The issue price will net 5 per cent. The value of the rolling stock secured by the bonds is $5,333,600.

Dominion Atlantic Ry.—Estimated passenger earnings for Feb., $20,309.14; freight earnings, $41,309.83; total earnings $61,618.97.

Esquimalt and Nanaimo Ry.—Under an agreement of Mar. 1910, subsequently [illegible] on Vancouver Island to be selected within three years. Certain lands have been selected, viz., 16,293 acres in the Nootka and Rupert Districts, and 3,484 acres in Sec. 2A Nelson District. The Legislature has passed an act authorizing the issuance of Crown Licenses for the same; subject to the company acquiring rights which had been granted to the Nelson District areas under the Coal and Petroleum Act, and extending to April 1914 the time within which the remaining area may be selected.

Grand Trunk Pacific Ry.—A special meeting of shareholders is called for April 11, in Montreal, to pass a by-law authorizing the issue of debenture stock created by the G.T. Pacific Act of 1913, to which assent was given recently.

Pacific Great Eastern Ry.—A London, Eng., press dispatch of Mar. 7, states that arrangements are in progress for an issue of $1,000,000 4½ per cent. debentures at 99, principal and interest guaranteed by the British Columbia Government.

Railway Building in Alberta.

A statement recently issued by the Alberta Minister of Railways shows that the total mileage of railways built in Alberta during 1912 by the various companies was 955 miles, made up as follows:—Canadian Northern Ry., 583 miles; Grand Trunk Pacific Ry., 254 miles; C.P.R., 93 miles; Edmonton, Dunvegan and B.C. Ry., 25 miles. In addition to this, 518 miles of grade had been prepared ready for laying steel. The total mileage on which steel had been laid in the province to the end of the year was 3,055 miles, divided as follows:—C.P.R., 1,480 miles; Canadian Northern Ry., 912 miles; Grand Trunk Pacific Ry., 658 miles; Edmonton, Dunvegan and B.C. Ry., 25 miles. Since the policy of guaranteeing railway companies' bonds was adopted by the province in 1909 more miles of railway had been built than in all the previous history of the province. Of 1,550 miles of steel laid by the various companies within the last three years more than 50% were built under guarantee. Of the total guaranteed mileage 782 miles of steel had been laid, equal to 25%; while 266 miles of grade were ready for the steel, equal to 34% of the total mileage for which bonds had been guaranteed.

The following information was recently given by the Government in the Legislature as to the bonds of the several companies guaranteed by the povince. The amounts received from the sale of the guaranteed bonds were:—Canadian Northern Ry. (1909-1911-12), $6,477,325.22; Canadian Northern Western Ry., $2,215,500; G.T. Pacific Ry. (1909), $2,246,807.50, 1911 $1,046,261; Edmonton, Dunvegan and British Columbia Ry., $3,194,546.69. The amounts paid out of these sums to the companies on account of construction were:—Canadian Northern Ry. (1909), $4,803,727.72, (1911-12) $1,530,295; Canadian Northern Western Ry., $2,054,715.80; G.T. Pacific Ry. (1909), $2,246,807.50, (1911-12), $1,406,260; Edmonton, Dunvegan and British Columbia Ry., $1,351,600. The amounts, with interest, to Jan. 31, standing to the credit of these companies were:—Canadian Northern Ry., $99,966.52; Canadian Northern Western Ry., $109,202.20; G.T. Pacific Ry., $1; Edmonton, Dunvegan and British Columbia Ry., $1,878,946.69.

The Great North Western Telegraph Co. has reopened its office at Cobden, Ont., and has closed its offices at Ameliasburg, Ont.; Dunham, Little Metis, and Paspebiac, Que.

Changes in National Transcontinental Railway Gradients.

The Minister of Railways, Hon. F. Cochrane, gave the following answers in the House of Commons, Mar. 19, to questions asked by the ex-Minister, Hon. G. P. [illegible]

No temporary trestles on the eastern division of the National Transcontinental Ry., originally intended to have been permanently filled, have been substituted for permanent structures.

No temporary or wooden bridges have been substituted where concrete and steel or permanent bridges were to have been constructed.

None of the momentum grades, or any portion of them, are on trestles.

The changes in gradients, bridges and trestles were suggested and recommended by the Commission's Chief Engineer. The estimated saving in cost to date is $27,797. The estimates having been made by H. M. Balkam, District Engineer.

No yards or divisional points have been reduced from the original plans in area, trackage, buildings or efficiency.

In addressing the Quebec Board of Trade, Feb. 21, referring to the correspondence published in Canadian Railway and Marine World for February, the Minister of Railways is reported to have said:—"At two points on the line, viz.:—near mileage 395, and near mileage 397, west from Quebec, gradients eastbound of 4.1%, and westbound 6.1%, have, for economy of construction and operation, been adopted for the present. These are what are known as velocity gradients and do not injuriously affect the operation of the road. Should it become advisable for any reason in the future to eliminate these sags, it can be done at one half the cost that the present contract prices call for." (March, pg. 118.)

Among the Express Companies.

W. G. [illegible] has been appointed Supply Agent, Canadian Ex. Co., Montreal, vice D. B. Atkinson, resigned.

E. C. Miner, heretofore Assistant General Agent, Canadian Ex. Co., Montreal, has been appointed acting General Agent, there, vice R. Murphy, General Agent, resigned.

H. Y. Knox, heretofore chief clerk to Superintendent, Dominion Ex. Co., Winnipeg, has been appointed agent at Saskatoon, Sask., vice C. H. S. Hammond, resigned.

E. W. Redmond, a Dominion Ex. Co. messenger, was recently found guilty of stealing a package containing $1,678.03 from one of the company's bags at [illegible] Lake, Ont.

R. Murphy, agent, Canadian Ex. Co., Montreal, who has resigned to enter private business, was presented Feb. 10 with a [illegible]

L. Trent, one of the Canadian Ex. Co.'s messengers between Detroit and Port Huron, Mich., has been retired after 40 years' service. It is stated that he travelled about 2,000,000 miles without mishap.

The Dominion Ex. Co. has opened an office at 1 Mount St., Manchester, Eng., in charge of D. H. M. Pim, who has been appointed agent for Manchester and District, reporting to London, Eng. The company will act as Freight and Passenger Agents for Manchester and District, for the C.P.R.

The territory of the route agents of the Canadian Ex. Co.'s Northwestern Division, [illegible] Port Arthur, Ont., to Watrous, Sask., inclusive, route agent, F. M. Smith, with headquarters at Winnipeg; lines west of Watrous, Sask., route agent, W. H. Nattress, with headquarters at Edmonton, Alta.

The Dominion Ex. Co. was organized May 23, 1873, the capital stock consisting of 20,000 shares of $100 each, all of which have been issued and are outstanding. The directors are: Sir Thos. G. Shaughnessy, W. S Stout, R. B. Angus, C. F. Smith and C. R. Hosmer, who are trustees of the entire capital stock on behalf of the C.P.R. A dividend of 8% was declared June 30, 1912. The company's officers are: President and General Manager, W. S. Stout; Vice President, R. Paton Lea; Secretary, H. C. Oswald; Treasurer, G. A. Newman; General Auditor, W. H. Plant.

The British Columbia Ex. Co., which operates stage, automobile and steamboat lines, chiefly in northern British Columbia, is making considerable alterations and improvements in its service, in order to accommodate itself to the changed conditions in the territory covered by it, on account of railway expansion, etc. A warehouse is being built at Tete Jaune Cache, and one of its vessels will ply on the Upper Fraser River between the end of steel on the G. T. Pacific Ry. and Grand Canyon, and possibly Fort George.

The Dominion Ex. Co. commenced its service over the Intercolonial Ry. and Prince Edward Island Ry., Feb. 1, with direct connection to Newfoundland, and at the same time its service was placed in operation over the Atlantic, Quebec and Western Ry., Caraquet and Gulf Shore Ry., Kent Northern Ry., New Brunswick Coal and Ry. Co., North Shore Ry., and Quebec Oriental Ry. The company now has 385 offices in New Brunswick, 210 in Nova Scotia, 93 in Prince Edward Island, and 504 in Quebec.

The Canadian Ex. Co. was organized Feb. 16, 1865, with an authorized capital of $3,000,000, in shares of $100, of which, $1,705,200 has been issued and are outstanding. The cash realized from the sale of these shares is given as $865,200. The G.T.R. acquired the capital stock of the company in 1891, by payment of $660,000 in cash, the total capital liability at that time being $1,500,000. This has since been raised to $1,705,200, the whole of which is held in trust for the G.T.R., by various officials of that company. The officials of the express company are: President and General Manager, John Pullen; Secretary-Treasurer, Frank Scott; General Counsel, W. H. Biggar, K.C.; General Auditor, W. W. Williamson.

In connection with the recent arrangement between the Dominion Government Railways management and the Dominion Ex. Co. by which the latter's service was put in operation over the Intercolonial and Prince Edward Island Railways, in addition to that of the Canadian Ex. Co., a dispute arose early in January, when the G.T.R. objected to carrying Dominion Express messengers and matter between Ste. Rosalie, Que., and Montreal, and claimed that Bonaventure Station, Montreal, was too congested to permit of the Dominion Ex. Co. handling matter there. After some little delay the G.T.R. permitted the Dominion Ex. Co. to carry on its business as arranged with the Government, pending some permanent arrangement being arrived at.

The Canadian Northern Ex. Co. was organized June 13, 1902. It has a capital stock of $1,000,000, in $100 shares, of which $300,000 was outstanding on June 30, 1912, but as yet no dividend was declared. The control of the company is in the hands of Mackenzie, Mann and Co., by right of ownership of 90% of the capital stock. The directors are: Sir William Mackenzie, Sir Donald Mann, R. J. Mackenzie and Z. A. Lash. The company's officers are: President, Sir William Mackenzie; Vice President, Sir Donald Mann; Third Vice President, D. B. Hanna; Secretary, R. P. Ormsby; Treasurer, L. W. Mitchell; General Counsel, F. H. Phippen, K.C.; Chief Solicitor, G. G. Ruel; Auditor, J. D. Morton; General Superintendent, W. C. Muir; Superintendent, C. A. Cunningham.

Telegraph, Telephone and Cable Matters

The Great North Western Telegraph Co. has opened an office at Kenogami, on the Quebec and Lake St. John Ry.

The G.T. Pacific Telegraph Co. announces that it has placed in operation telegraph circuits between Regina, Canora, Yorkton and Winnipeg.

The Great North Western Telegraph Co. has appointed Miss A. Lord, local manager at Barrie, Ont., vice W. M. Dobbs; and J. W. Deslauriers, local manager, at Sherbrooke, Que., vice S. F. Butzer, resigned.

It is reported that the Dominion Government is arranging for the erection of wireless telegraph stations at Pas, Man., and the proposed terminus of the Hudson Bay Ry. on Hudson Bay, in order to facilitate construction.

H. Hughes, who died at Canso, N.S., recently, was connected with the Commercial Cable Co., for several years, chiefly in underground cable construction in Nova Scotia, Newfoundland and New England states.

The Board of Railway Commissioners has ordered the C.P.R. to accept and transmit over its land lines, transatlantic wireless messages received by the Marconi Wireless Telegraph Co., connecting with the Marconi stations at Glace Bay and Louisburg, N.S.

F. A. Hamilton, Chief Electrician, Commercial Cable Co.'s. s.s. Mackay-Bennett, who died at Halifax, N.S., recently, was connected with telegraph construction from its early days, and took part in several cable expeditions to various parts of the world. Some of his work was connected with the laying of cables between Sydney, N.S., and Placentia, Nfld.

An additional cable is being laid to connect Prince Edward Island with New Brunswick, at an approximate cost of $45,000. The rate of 30c. for 5 words for night lettergrams has been extended to include all offices on the Island. The telegraph system is operated by the Western Union Telegraph Co., under a lease for 99 years from Jan. 1, 1912. The property taken over consists of 317.5 miles of land lines in P. E.I., about 9 miles of cable between Cape Traverse and Cape Tormentine, and about 35 miles of land lines between Cape Tormentine and Sackville, N.B., and there are 28 telegraph offices.

The Mackay Companies' annual meeting was held at Boston, Mass., Feb. 15. The financial statement for 1912 showed that $4,136,000, sufficient for the dividend on preferred and common stock, and for administration expenses, was drawn from the operating companies and disbursed. The investments in other companies were $92,013,000. The amount realized from the sale of the holdings in the American Telegraph and Telephone Co., some three years ago, is still held in easily convertible form as an emergency fund and for extensions. The earnings for 1912 were reported to have shown a considerable increase over 1911, there was no increase in capital stock, and the company has no debts. Sympathetic reference was made to the loss sustained in the death of one of the trustees, R. A. Smith, Toronto, and Sir Edmund Osler was elected in his place.

Electric Railway Department.

Winnipeg Electric Railway Company's Car Shops.

About six years ago the Winnipeg Electric Ry. management took up the policy of constructing such rolling stock as would be required by the company, and in pursuance of that policy built the shops now in use in Fort Rouge, Winnipeg, to the rear of the Fort Rouge car barns, on a large tract of land connected with the Canadian Northern Ry. by a siding, and utilized as a storage for such outside material as is used on the lines. The location of the shop in this reservation, alongside the railway siding, gives easy access to the bringing in of the materials for car construction.

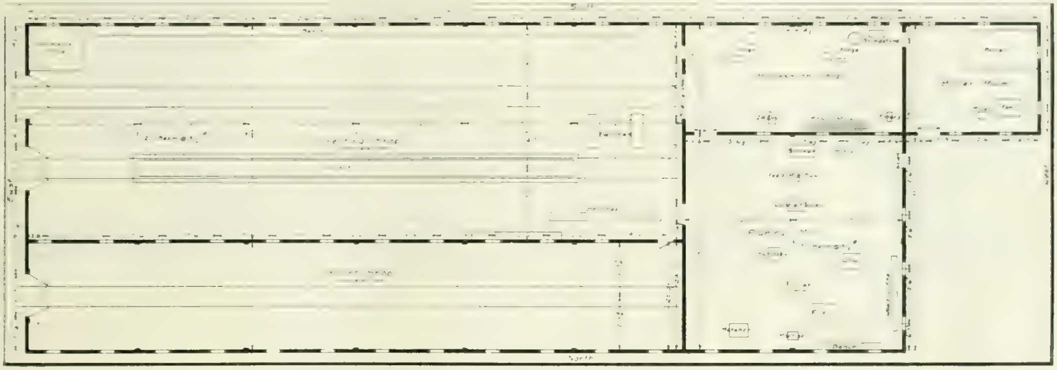


Fig. 1—Plan of Winnipeg Electric Railway Car Building Shops in Fort Rouge.

A plan of the shops is given in fig. 1, and the different departments in the other illustrations. The main structure is of brick, a 9 in. brick wall resting on a concrete footing 6 ft. deep, and 2½ ft. wide at the base, owing to the soft nature of the soil on which the shops stand, this providing ample footing. The building is 200 ft. by 75 ft., with a leanto addition to the rear for the boiler room. In the centre of the building there is a clear height of 18 ft., sloping to each side, there being three bays the length of the building, supported either by a brick wall or 12 in. I beams, according to the position in the building. The bents are 25 ft. apart. The I beams are supported on concrete footings that have a 4 ft. square base. All the departments, save the blacksmith, are paved with concrete.

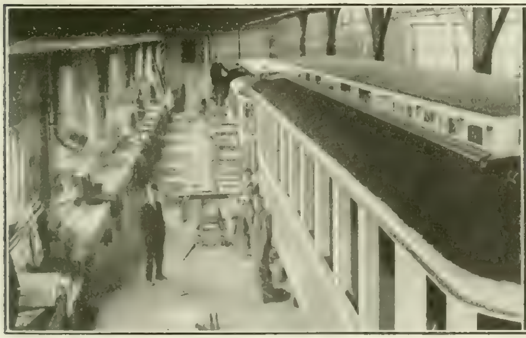


Fig. 2.—Interior of Erecting Shop, from the East

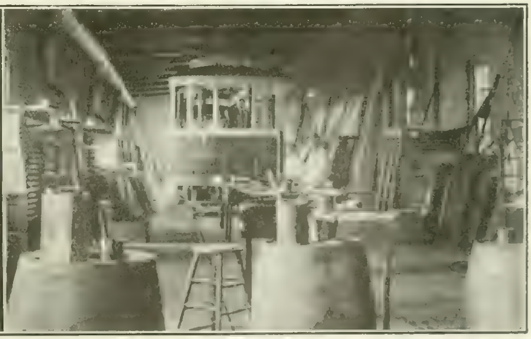


Fig. 3—Interior of Paint Shop, from the West.

The erecting shop, which occupies the main portion of the building, opening through large car doors to the east, facing on the rear of the car barns, is 150 by 50 ft., occupying two bays, the northerly one being divided off by a brick wall. The interior arrangement is shown in fig. 2, and the plan in fig. 1. In the southeast corner is the foreman's office, from the top of which the view, fig. 2, was taken. Along the south side, and on the tracks at the west end, are sundry carpenters' and fitters' benches, for the men fitting the cars together.

The erecting shop has two erecting tracks, which will each hold two cars with plenty of room at each end, in the space to the east of the bench space at the west end of the room. The northerly track has a 100 ft. pit, centrally located in the shop length. It is 4 ft. 2 ins. wide and 5 ft. deep, the bottom being of concrete, with a 13 in. brick wall, on the top of which is an 8 by 10 in. timber carrying the rail. The pit slopes from the centre and ends to points a quarter the length of the pit from each end, draining out into the sewer.

The paint shop, fig. 3, occupies the northerly bay of the building, and is the same length as the erecting shop, and 25 ft. wide. It is arranged to accommodate only two cars at a time, the rear portion of the shop from which the view in fig. 3 was taken, being set out with racks and benches for the finishing and drying of sash and other removable car parts. In general it resembles the usual railway varnish room, for such is most of the work on a street car.

The mill, fig. 4, is to the rear of the paint shop, occupying two bay widths of the building. It is 50 ft. square and of the same general characteristics as the other rooms. The machinery equipment, as noted on fig. 1, is sufficiently extensive to handle the car work to advantage, and includes the usual run of mill machinery. The arrangement of the machines is shown in the two illustrations.

The blacksmith shop, fig. 5, to the south of the mill, is 25 by 50 ft. It is only lightly equipped, containing two forges, with an anvil and die block accompanying each, and in addition, a 24 in. drill press, double emery wheels and a grindstone. The drive for this machinery is from the line shaft in the mill projecting through the wall. A 35 h.p. induction motor on the floor in the mill provides ample power for all purposes. The air blast for the forges is derived from an 18 in. centrifugal fan on the wall at the end of the room.

All power being electrical, obtained from the company's lines, the only requirement of a boiler room is for heating purposes. It contains a small unit, about 30 h.p., maintaining a low pressure of steam. On top and to the rear of the boiler are mounted heating coils, in batteries in the usual manner. Air is forced in among these coils by an 8 ft. fan, operated by a 10 h.p. induction motor. A large pipe leads out from the top of the fan, branching off in the boiler room, one leading straight down to the erecting shop, where it again divides, with a branch along each wall, while the other branch from the main pipe passes diagonally across the mill, and runs along the north wall of the paint shop. The nature of the pipe and the type of outlet used are shown in the several illustrations.

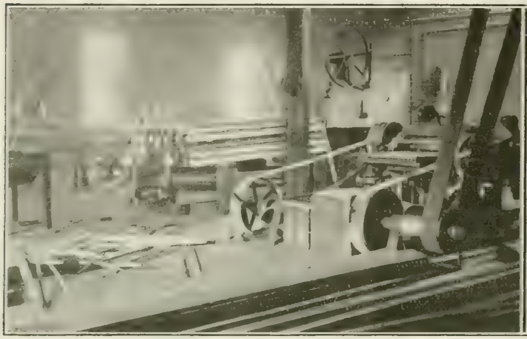


Fig. 4.—Interior of Mill, Looking Northeast.

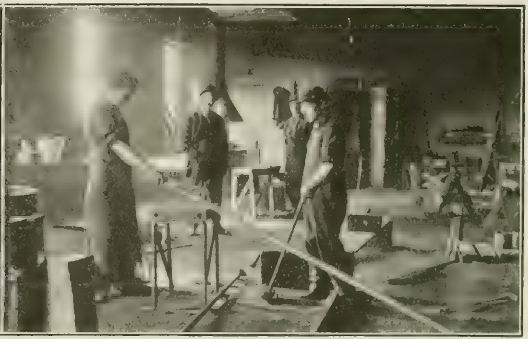


Fig. 5.—Interior of Blacksmith Shop, from the East.

The type of cars under construction in this plant was described in Canadian Railway and Marine World for February, this plant being equipped to turn out one of these cars a week. This capacity is not maintained throughout the year, it having been the policy the last two years to turn out about 40 cars a year, running the shops on short time during a portion of the year. Everything pertaining to the car body is constructed in the shops, with the exception of the heavier forgings and some of the machine work, which is produced in the company's Assiniboine Ave. repair shops. Standard equipment, such as trucks and electrical equipment, is all obtained on the outside.

The shops are under the direction of G. Garrett, Master Mechanic, from whom the information above has been obtained.

Report on the Ontario West Shore Railway's Condition

A report prepared by H. W. Middlemist, C.E., Toronto, upon the condition of the partially constructed Ontario, West Shore Ry., was recently laid before a meeting representing the municipalities which had guaranteed the company's bonds, held in Goderich, Ont. The report states that the work done on the line may be divided into two sections—first, from the junction with the C.P.R., opposite Goderich, in Colborne Tp., to Kintail, and from Kintail to Pine River. The grading has been done along the whole of the first section for a width of 9 ft. for the top of the embankment, and the deep cuts about 20 ft., but there is considerable dilapidation, owing to the falling away of banks. Track has been laid to Kintail, but requires to be lifted, lined up and ballasted. The culverts are in good condition, but the wing walls will have to be enlarged so as to take the slopes for a 14 ft. bank. The trestle work at the Port Albert bridge is in poor condition; and the piers for the steel superstructure are in an unsatisfactory condition. "To sum up," adds Mr. Middlemist, "this section is in a very bad state and is far from being completed in a satisfactory manner. . . In making the estimate I have endeavored to keep down the expense as far as I could conscientiously do so. No provision has been made for any turnouts for passing cars on the work already done."

The section from Kintail to Kincardine has been partially graded, but only to the same average width of 9 ft. There is considerable excavating yet to be done in the deep cuts, and the bank should be widened to 14 ft. The abutments for one bridge have been partly put in, but will have to be reconstructed. In order to make up his estimates Mr. Middlemist made the necessary designs for the bridges on this section.

His enquiries showed that 859 tons of steel rails have been delivered sufficient to lay 7.8 miles of track, and there are fishplates, bolts and spikes on hand sufficient to properly lay these rails. It would require 1,066 tons of rails to complete the 9.7 miles remaining into Kincardine. The other material on hand includes 4,050 ties, one 70 ft. steel span, two 20 ft. steel spans, and a quantity of bridge timber and fence posts, available for these two sections of the line.

The two miles of line required to carry the line from the Kincardine road into Goderich would be the most expensive to build on the whole line. This section would require a steel bridge of three spans of 150 ft. each; a steel bridge of 100 ft. span; considerable trestle work and subways under the C.P.R. and the G.T.R. He submitted four propositions as to this section, and recommended the adoption of the fourth. This plan gives a road with a 3% gradient to the Goderich northern road, a 1,500 ft. on the flats by the side of the river, and a 500 ft. trestle to the G.T.R., thence to North St. and on to the court house.

Appended to the report are detailed estimates, and the following: -

Valuation of Works Already Executed.

Right of way	$ 1,725.00	
Fencing on one side ..	11,4[illegible]1.00	
Excavation, including overhaul	46,961.00	
Pipe culverts	3,64[illegible].00	
Rails, fish plates, bolts, spikes, etc., including switches and crossings	70,288.00	
Ballasting	6,960.00	
Ties	22,310.00	
Laying track	7,250.00	
Road and farm crossings	420.00	
Bridges and culverts..	31,243.00	
Temporary trestle at Port Albert	11,633.00	
Engine shed	3,000.00	$216,801.00
Engineering, 5%		10,840.00
		$227,641.00
Profit, 15%		34,146.00
		$261,787.00
Add for material as far as could be found:		
70 foot steel span ...	$ 2,605.00	
859 tons of rails at $36	30,924.00	
55 tons of fish plates at $37	2,035.00	
Estimated 95 cwt. of bolts at $3.90	370.50	
Estimated 458 cwt. of spikes at $2.65	1,213.70	
Estimated 7,000 ties at 50c	3,500.00	
Estimated 431 bridge ties at $1.50	775.80	
Two plat girder spans of 25 feet, 17,550 feet at 4½c.	789 75	
Estimated 1,000 fence posts, 8 feet long, at 15c.	1,200 00	$43,413.75
Total		$305,200.75

Summary of Total Cost of Work to be Done and Rolling Stock.

Cost of line into Goderich	$120,969.34
Cost of line from C.P.R. junction to Kintail	86,189.71
Cost of line from Kintail to Lambton Street, Kincardine	279,807.15
Cost of electrical equipment for 35 miles	196,770.00
Total cost with rolling stock	$707,536.20 * 104,800.00
Total cost with rolling stock ...	$707,536.20

Estimate for rolling stock includes 6 passenger cars, 2 baggage cars for light freight, 1 electric locomotive, 10 flat cars, 10 box cars.

The municipalities interested had guaranteed bonds for $400,000, as follows:—Town of Goderich, $150,000; Town of Kincardine, $50,000; Ashfield Tp., $125,000; Huron Tp., $75,000. On these bonds the municipalities are paying 5% interest.

The representatives at the meeting passed a resolution, stating that the situation disclosed by the report was unsatisfactory to the municipalities which had guaranteed the bonds, and asking the Ontario Railway and Municipal Board to investigate "generally everything in connection with the affairs of the said company, and to apply any and all remedies within its power."

The O. & W.S. Ry. is a project that Canadian Railway and Marine World has never been able to obtain any official information in regard to, communications asking for the same having almost always been ignored. J. W. Moyes, of Toronto, appears to have had charge of construction and is said to be one of the principal promoters.

Electric Railway Projects, Construction, Betterments, Etc.

The Alberta Metropolitan Ry., which was incorporated by the Alberta Legislature in 1912, has been granted an extension of time for the construction of its authorized line from Calgary to Shepard, Alta. The provisional directors are:—W. J. C. Madden, J. M. Empey, G. P. Madden, W. T. Lathwell, Calgary, Alta.; W. H. Clipperton, Toronto; D. B. Waller, Dresden, Ont.; M. E. Brown, St. Thomas, Ont.

British Columbia Electric Ry.—The civic authorities of Vancouver recently met Chief Engineer Conway, of the B.C.E.R., and discussed the possibility of the company placing its wires through the centre of the city in underground conduits. It is stated that Mr. Conway promised that within a few weeks he would submit plans showing an extensive system of underground conduit work for the city business district. In carrying out this project the city will, as far as possible, have conduits laid in the lanes.

The New Westminster City Council is considering the company's plans for the laying out of a new yard at a cost of about $100,000. There will be track accommodation for 480 cars, and repair tracks.

A new substation, with a capacity of 2,000 k.w., is to be equipped at Victoria, according to press reports. The ballasting and other work necessary on the completion of the Saanich Peninsula line is being pushed forward, and it is expected that the line will be opened as far as Todd Inlet early in April.

In connection with the development of the power plant at Jordan River, contracts are reported to have been let for much of the machinery necessary for the development of an additional 12,000 h.p. The company has purchased the Vancouver tug Protective to take the place of the Nidge, which was recently lost while carrying supplies from Victoria to Jordan River. (Mar., pg. 141.)

Buffalo and Fort Erie Ferry Ry.—Press reports state that plans are being made for the electrification of the line between Fort Erie Ferry and Fort Erie Beach, Ont., and to extend the line to Bridgeburg and to Port Colborne, connecting at the latter place with the Niagara, St. Catharines and Toronto Ry. (Mar., pg. 141.)

Burrard, Westminster Boundary Ry. and Navigation Co.—The Dominion Parliament is being asked to extend the time for the construction of the several lines authorized; to increase the capital stock from $1,000,000 to $2,000,000, and the bonding powers from $30,000 to $40,000 a mile. Tupper, Kitts and Wightman, Vancouver, B.C., are the solicitors.

In connection with the building of the proposed line from Stave River Falls to Mission City and New Westminster, the first section of which, from the Falls to Pitt River, is expected to be put under construction in May, the British Columbia Legislature voted $200,000 towards the construction of a railway and general traffic bridge across the Pitt River at Coquitlam. The estimated cost of the bridge is $700,000, and it is expected to have it, and the entire electric railway, 40 miles, completed during 1915. (Mar., pg. 141.)

Edmonton Radial Ry.—The following track construction is projected for this year on this municipally owned line at Edmonton, Alta.:—Permanent (double track basis) 54,748 ft.; temporary (single track basis) approximately 5,000 ft. W. T. Woodroofe is Superintendent.

The Edmonton, Stoney Plain and Wabamun Ry. Co. has been incorporated by the Alberta Legislature to build a railway from Edmonton to Stoney Plain, thence to the shores of Lake Wabamun, Alta. The provisional directors are:—A. Boileau, E. S. McQuaid, Edmonton; A. V. Pujebet, Paris, France.

The Elbow River Suburban Ry. Co. has been incorporated by the Alberta Legislature to build a line from the junction of Canyon Creek with the Elbow River, northerly and easterly, starting the Sarcee Reserve on the west, and finally returning into Calgary along a line just south of and parallel to the Springbank Trail. The provisional directors are:—W. Georgeson, G. L. Peet, O. S. Chapin, Dr. G. A. Ings, A. D. Connors, Calgary, Alta.

Forest Hill Electric Ry.—The provisional directors named in the application to the Ontario Legislature for the incorporation of a company with this title are:—W. E. Grierson, T. J. Glover, R. H. C. Harris, W. T. Rogers and J. Hales, Toronto. (Mar., pg. 141.)

Halifax Electric Tramway Co.—It is proposed, we are officially advised, to build about a mile of new track on Quinpool Road, from Oxford St. to the Arm Bridge, Halifax, N.S., during this year. Application has been made to the city council to build a second track on about one mile of existing lines in the city. J. W. Crosby is Manager and Purchasing Agent. (Feb., pg. 90.)

Hamilton Incline Ry.—Plans have been filed with the Hamilton, Ont., City Council, for an incline railway from Wentworth St. to the top of the Mountain. The gradient will be 35 ft. in 100, and the line will be equipped to carry street cars, as well as vehicles and pedestrians.

Hamilton Mountain Electric Ry.—The Ontario Legislature is being asked to incorporate a company with this title to build a railway from the point where the Horning Mountain Road is crossed by the Brantford and Hamilton Ry., easterly to Mount Albion, with branch lines. The provisional directors are:—T. H. Crerar, L. E. Awrey, S. B. Thomson, G. E. Armstrong and T. H. Sturson, Hamilton.

Hamilton St. Ry.—Press reports state that it is proposed during this year to relay the tracks on King St., Locke St., and Sherman Ave., Hamilton, Ont. (Dec., 1912, pg. 622.)

Hamilton, Waterloo and Guelph Ry.—Press reports state that owing to the death of Jno. Patterson, this project will be dropped, and the lands acquired for the right of way sold. (Aug., 1912, pg. 421.)

Hull Electric Ry.—Press reports state that plans have been prepared for an extension to Connaught Park and the Jockey Club race track; to build a second track on about half a mile, and to lay out terminal facilities at Connaught Park, Hull, Que. (Feb., pg. 90.)

International Ry. and Development Co.—G. R. McDuff, the company's engineer, is reported to have completed surveys for an electric railway through the Delta district to New Westminster, B.C., and to have gone to England to arrange the financing for its construction. This information was made public at a recent dinner of the Delta Board of Trade. (Aug., 1912, pg. 421.)

Kingston, Portsmouth and Cataraqui Ry.—An agreement has been signed between the company and the Kingston, Ont., City Council, under which the Princess St. line is to be reconstructed. (Jan., pag. 39.)

Lethbridge Municipal Ry.—The City Council of Lethbridge, Alta., is considering plans for the building of an additional four miles of [illegible] (Nov., 1912, pg. 573.)

Montreal Tramways Co.—In an interview, Mar. 7, E. A. Robert, President, is reported as stating that the proceeds of the issue of additional capital stock will be utilized in improvements and betterments. It is estimated that during this year at least $2,000,000 will be required for this purpose, and the plans made call for a total expenditure of $4,000,000. The work will be taken in hand at once, and the shares will be issued as the money is required. (Mar., pg. 141.)

Port Arthur and Fort William Electric Ry.—The city of Fort William, Ont., will take over, Dec. 1, the portion of the lines, situated within its own borders, now operated by the joint commission with Port Arthur. The lines to be taken over are 14.875 miles, the remaining mileage—10.45—is within the boundary of Port Arthur. After the date mentioned each city will operate the lines within its own boundary and the present joint commission will be dissolved. During the period within which the joint commission has been operating the lines each city has been spending money on betterments and extensions, and in the purchase of additional rolling stock. The city of Fort William proposes during this year to add six miles of new tracks as follows:—Franklin St. to Walsh St., single track, 3,600 ft.; Syndicate St. to Franklin St., double track, 3,618 ft.; Dease to Simpson St., single track, 4,500 ft.; Victoria to Dease St., single track, 4,460 ft.; on Island no. 2, 8,800 ft.; Mission Road across G.T. Pacific Ry. property to Mission River, 8,800 ft. The first of these lines to be built will be the last mentioned. (Feb., pg. 90.)

Regina and Moose Jaw Interurban Ry.—Press reports state that work is to be started early in the spring on the construction of an electric railway between Regina and Moose Jaw, Sask., 42 miles. The line will pass through Belle Plaine, Grand Coulee, and Pense. S. Friedman, Moose Jaw, is one of the provisional directors. (Feb., pg. 90.)

Regina Municipal Ry.—Among the bylaws carried by the taxpayers of Regina, Sask., Feb. 25, was one providing for the expenditure of $825,000 upon street railway construction. Tenders are under consideration for the supply of track intersections, track curves and turnouts. It is proposed to invite tenders for a 1,000 k.w. motor generator set, and one 400 k.w. steam driven unit to be installed in the new addition to the power house.

The City Council has granted permission to Anderson and Luneny to build an electric line on 16th Ave. from McDonald St. to Park St. The line will be operated as part of the city system. (Nov., 1912, pg. 574.)

St. John, N.B.—A contract has been let to the Dominion Bridge Co., by the Provincial Government, for the superstructure of a bridge to replace the present suspension one at St. John, N.B. The new bridge will be of the spandrel arch type, and is estimated to cost $275,000. It will have a concrete floor, 50 ft. wide, on which will be laid a double track for electric cars, two driveways, and two sidewalks. The contract calls for the completion of the work by June 1, 1914.

St. John Ry.—Application is being made to the St. John, N.B., City Council for permission to extend some lines, and to build a second track on other lines. (Dec., 1912, pg. 623.)

St. Thomas Street Ry.—The City Engineer has been directed to prepare estimates for the thorough reconstruction of the Talbot St. line, St. Thomas, Ont. (Aug., 1912, pg. 623.)

Sherbrooke Ry. and Power Co.—We are officially advised that it is intended to build about a mile of new track this year. The route has not been definitely decided, but it is likely that it will be on Drummond, Belvedere, Armoury, Alexander and Aberdeen Sts. to the G.T.R. station. (May, 1912, pg. 252.)

Toronto and York Radial Ry.—Surveys are reported to have been completed for an extension of the Metropolitan Division easterly to Unionville, Markham and Stouffville, Ont., and local reports state that construction will be started at an early date. There have been several conferences between officials of the company and the city respecting the electric railway situation at the north end of Yonge St., and it is expected that an arrangement may be made for the building of a double track line on Yonge St. to York Mills, to be used jointly by the company and the city owned lines. (Mar., pg. 141.)

Tramways, Limited.—The Alberta Legislature has incorporated a company with this title to build the following lines:—From Edmonton northerly to Bon Accord, with a branch to Fort Saskatchewan Settlement; from Edmonton northeasterly to Fort Saskatchewan Settlement, and from Edmonton easterly and northerly on the south bank of the Saskatchewan River to Fort Saskatchewan Settlement, with branch lines not exceeding in any one case six miles in length. The provisional directors are: G. Cresswell, S. Carson, W. Golley and S. H. Smith, Edmonton.

White Horse to Dawson, Y.T.—A Dawson, Yukon, press report states that representatives of the White Pass and Yukon Ry., the Klondike Mines Ry., and the Noyle Concessions, Ltd., are negotiating for the joint construction of an electric railway from White Horse to Dawson.

Winnipeg Electric Ry.—The Winnipeg Board of Works passed a resolution, Mar. 5, calling upon the company to build a number of additional lines during this year. We are officially advised that the company proposes to build a car barn, plans for which are being made, but no definite arrangements have been made as to when it will be erected. (Mar., pg. 142.)

Taxation of Electric Railways in Ontario.

The Ontario Government collected $12,833.10 in taxation from the electric railways operated in the province for the year ended Oct. 31, 1912. This was made up as follows:—Berlin and Northern Ry., $22.70; Brantford and Hamilton Ry., $251.60; Chatham, Wallaceburg and Lake Erie Ry. (for 1911), $597.10; Cornwall St. Ry. Light and Power Co., $40; Galt, Preston and Hespeler St. Ry., $77; Hamilton, Grimsby and Beamsville E. Ry., $254.40; Hamilton St. Ry., $785.75; Hamilton and Dundas St. Ry., $55.72; Hamilton Radial Ry., $377.30; International Ry., $175.10; International Transit Co., $37; Kingston, Portsmouth and Cataraqui St. Ry., $104; London St. Ry., $451.20; London and Lake Erie Ry. and Transportation Co., $290; Niagara Falls, Wesley Park and Clifton Tramway Co., $76.60; Niagara, Welland and Lake Erie Ry., $15.20; Oshawa Ry., $38.90; Ottawa Electric Ry., $1,372.50; Peterborough Radial Ry., $105.82; Preston and Berlin St. Ry., $72.50; Sandwich, Windsor and Amherstburg Ry., $397.06; Sarnia St. Ry., $92.50; Toronto Ry., $6,422.82; Toronto Suburban Ry., $130.54; Windsor Essex and Lake Shore Rapid Ry., $553.59.

St. John Railway Company's Annual Report.

The following report for 1912 was presented at the recent annual meeting:—

The past year's business shows a net profit after providing for interest on bonds and all other charges of $58,158.06, out of which there have been paid 4 quarterly dividends of 1½%, amounting to $48,000, leaving a balance of $10,158.06, which has been transferred to profit and loss account. Our street railway earnings were reduced during the year in consequence of paving by the city of Mill, Dock, King and Charlotte Sts. This work was done during our rush season and prevented us operating our full service. We have recognized the efficient service given by our employes by increasing their wages.

Careful attention has been paid to the maintenance of the plant, rolling stock and other properties, the physical condition of which is equal to that of any other electric light and street railway system in Canada. During the year we purchased six p.a.y.e. combination cars, seven acres land adjoining our Seaside Park property, and built a line for the transmission of electric current for light and power to Rothesay, and through Simonds Parish as far as Crouchville. We are now building an auxiliary boiler house for three boilers. We have on hand all the rails, ties, etc., required for the extension of our railway to Crouchville, the cemetery, and for the new line on Broad St. We have also built a fireproof car barn on Wentworth St. We propose during the coming year to purchase additional cars, to erect another fire proof car barn, to install additional engine and generators, to extend our street railway to Crouchville, and the cemetery, and to lay a new track on Broad St. Other extensions of the railway are also proposed.

We were able to come to an agreement with the local Government as to crossing the new bridge to be erected at the Falls. We regret to report that the terms exacted by the Government are in our opinion too onerous. Our company is required to pay an annual rental, starting with $3,000, increasing to $5,000. In addition, we are obliged to pay half the cost of protecting the railway crossing, which includes wages of gatemen. We are also to pay the cost of connecting our railway and laying tracks on the bridge. This will require an expenditure of upwards of $68,000. When the bridge is completed, it will enable us to give a through service between East and West St. John. We applied to the City Commissioners for permission to lay double tracks on the proposed extension to Kane's Corner. Negotiations in connection therewith have been pending for some time. The Commissioners have notified us that they will not give us the right to put down double tracks unless we will pave from curb to curb with granite blocks on a concrete base from Walsh's Corner to the northeast side line of Erin St., and from there to Kane's Corner between the tracks and 18 ins. on each side. Under the company's charter the duty imposed on it is to maintain and keep in repair that part of the street occupied by the company and 18 ins. outside of the rails. The work required by the city would cost upwards of $30,000. Your directors did not feel warranted in committing the company to such a large additional expenditure. A double track would have enabled us to furnish the public with an up to date and efficient service. We do not expect that this extension will be profitable for some time, but we hope in the future as the suburbs are built up that it will pay. Your directors have been able to obtain permission from the Dominion Government to cross the Intercolonial Ry. at Haymarket Square.

In answer to enquiries that have been made by prominent shareholders and citizens as to our running large double truck cars, we have to say that in consequence of the narrow strip between the two tracks and the sharp curves and steep hills, we are not able to operate them. We would be glad to put such cars in commission if it were practicable, as it would effect a considerable saving in the wages of motormen and conductors.

Press reports state that an offer of $1,200,000 for the company's stock, equal to $150 a share, was considered at the meeting, the same having been made by J. P. Graham, President, Bangor St. Ry., and Portland St. Ry., and H. W. Cushman, President of the Merrill Trust Co., of Bangor, Me., and who are said to be promoting the New Brunswick Hydro Electric Co. The matter was referred to a committee, but it was stated later by the Vice President, H. H. McLean, K.C., M.P., who presided in the absence of the President, Jas. Ross, of Montreal, that the property was not for sale.

Building for British Columbia Electric Railway Employes.

The B.C. Electric Ry. Co. has called for tenders for the construction of a building for the use of its motormen, conductors and shop employes, stationed in Vancouver. It will be located at the corner of Main and Prior Streets, in the heart of the city, and directly opposite the principal car barns and repair shops.

It will be 25 by 60 ft. and five stories high, built of reinforced concrete, with facings of brick and artificial stone. The estimated cost is about $35,000. There will be two entrances to the ground floor, one from Main St. and the other from Prior St. On the Main St. frontage will be located the Station Master's office and behind this a large waiting room for the men. The entrance from Prior St. will be at the rear of the block and will lead to the elevator and stairways by means of which the upper stories will be reached. Above the ground floor, the first floor will be used for lockers for the men, the second floor for a reading room and the third floor for a billiard room with one billiard and two pool tables. In the upper story will be a gymnasium 18 ft. high, the entire area of the floor being left clear for this purpose. The company will equip the gymnasium with a full outfit of apparatus. Lavatory accommodation will be provided on each floor and shower baths are planned for the gymnasium. The entire building will be heated with hot water. Work will be started at once and it is planned to have the building ready for use during next summer.

The Regina Municipal Ry. Employes have organized a club to further athletics and social gatherings among themselves, and have elected as President the Superintendent, H. Doughty, who takes a strong interest in the movement.

Height of Street Car Steps.—The New York State Public Service Commission is reported to have ordered that all closed street cars in New York City be equipped with steps not higher than 15 ins. from the ground by Jan. 1, 1914.

In connection with the operation of electric railways in Canada, two non fatal accidents were reported in January, one being due to a collision, and the other to a falling crane.

Report on the Street Railway Situation in Winnipeg.

The report submitted to the Manitoba Public Utilities Commission by R. M. Fenstel, C.E., a civil engineer of Madison, Wis., who is connected with the Wisconsin Railway Commission, on the street railway traffic in Winnipeg, is a preliminary one. It is a lengthy document and deals with the general problem, the special problems, such as bad rail conditions, subways and engineering difficulties. The general problem outlined was that of investigation as to the general character of the service furnished, but this Mr. Fenstal states can only be dealt with after an exhaustive study of all the conditions by special observation. The special problems can be considered before a general study is made. Referring to these Mr. Fenstal states it is generally recognized that the Main St. subway is taxed beyond its capacity. It was thought that the Arlington St. overway would have relieved this congestion but the company has protested against its use on the ground that the gradient of the approaches made it dangerous for the operation of traffic. The approaches were found to have a gradient of 7.1% each, and there should be no difficulty in operating an average car in use in the city, fully loaded, with the track in "good average condition." The three words quoted are stated to mean the conditions which usually obtain during the whole year, excepting certain times in Jan., Feb. and Mar. There are times during the year when very bad rut conditions exist owing to fine snow which combines with the sand used, forming a black scale. In Duluth cars are operated over 6.95 and 8.3% gradients; in Minneapolis cars are operated over a 7% gradient, and in other cities over equally steep gradients under practically the same conditions. In each case the operation of the cars is considered a serious problem to be met with "continuous vigilance." The survey of Logan and Dufferin avenues intersections with Arlington St. developed the fact that connecting curves could be installed for both east and west directions off the driveway. The operation of cars on the Arlington St. overway would benefit the movement of traffic from north of Dufferin Ave. and east of McPhillips St. to and from the C.P.R. shops, and from north of Dufferin Ave. and west of Arlington St. to the south of the C.P.R. and east to the downtown district. This traffic, however, could be taken care of by the connection of the line from Selkirk Ave. across under the McPhillips St. subway to Logan Ave. The territory served in this way would be larger than that served by the Arlington St. overway. This would give some relief to the Main St. subway, but further data was required to form a definite opinion. An additional crossing of the C.P.R. is required between Main St. and Arlington Ave., and two propositions have been considered—a subway at Princess St., and an overway or subway at Salter St. Even if it were proved desirable for general traffic purposes to have a subway at Princess St., there were features which made it undesirable as a street railway proposition. A subway or overhead bridge at Salter St. would be more suitable and, that being at present a residential district, which would ultimately become a retail district, it could be constructed at a reasonable cost. The single track on Main St. bridge was the cause of much congestion. The strengthening of this bridge to carry a second track would be impracticable from the standpoint of economy, and the building of a new bridge is the only solution of the problem. The delays at the St. James single track subway are a source of considerable irregularity in the operation of the Deer Lodge line. The grade conditions and the narrowness of the subway are a source of danger. A subway for general, as well as for street railway traffic, could be constructed at moderate expense, and would meet the needs of a rapidly developing district.

British Columbia Electric Railway Co.'s New Receiving and Sub Stations.

Operations have been started by the B.C. Electric Ry. Co. on the construction of a large receiving station, which will regulate the distribution of current to the company's territory on the southern mainland of B. C. The site for the building is in D.L. 118, Burnaby, just on the boundary line of the city of Vancouver, where the company has a large tract of land. The total expenditure which will be made on the property is estimated at $250,000. Two buildings are to be erected, a main receiving station and a small sub station. Both will be of steel frame and reinforced concrete, and fire proof throughout. They will be one story high with an additional story for the transformer galleries. In the receiving station there will be four incoming lines, delivering the current at 60,000 volts. The electrical equipment will consist of 4 banks of 3 transformers each, with a total capacity of 36,000 k.w., by which the current will be stepped down from 60,000 to 11,000 volts for distribution to the sub station. The sub station which will be erected in connection with the receiving station will be equipped with 2 motor generator sets and a bank of 11,000-2,200 volt transformers. From this station will be regulated the supply of current for railway purposes and for public and private lighting in the vicinity of the station. The electrical equipment of both stations will include the usual installation of a full outfit of lighting arresters, switching apparatus, etc., the company's electrical engineers having designed the stations in accordance with the latest methods followed by central station and electric railway companies. At present the current from the company's generating station is sent to the Vancouver and other sub stations at high voltage. When the new sub station is completed, the Vancouver station and other stations now connected with the transmission lines will be used as sub stations, receiving their current at 11,000 volts from the Burnaby station. In connection with the new arrangement the company will reconstruct its transmission system from the power house on the North Arm of Burrard Inlet to Burnaby, in order to enable the current to be carried at 60,000 volts.

As soon as the Burnaby receiving station is completed, the company will erect a similar station near Sapperton, just on the outskirts of New Westminster. The equipment of this plant will be almost identical with the Burnaby station and the plans call for an expenditure of about $200,000. From the Sapperton station, power will be sent to the sub stations in the South Fraser Valley, which cover the supply of the Fraser Valley interurban railway and the demands of private parties for light and power in the district at 34,000 volts. From the point will also be distributed the current for the various sub stations lying to the east of Sapperton. In the plans arrangement has been made whereby in case of accident to the transmission line, current from either the Burnaby or Hastings station may be supplied to any point in the company's territory.

In Vancouver the company is erecting a sub station covering the west end of the city, the residential and apartment house centre. This building will be 60 by 68 ft. and one story high, with an additional story for the transmission gallery, and fire proof throughout. Structural steel with brick curtain walls and a concrete roof are being planned. The estimated expenditure on the station will be about $100,000. Current will be fed to the building at 11,000 volts, transmission lines being arranged from the Vancouver sub station as well as the Burnaby receiving station, thus affording an alternate base of supply in case of accident to either line. The electrical equipment of the building will consist of two 1,000 k.w d.c. motor generator sets, consisting of 11,000 volt motors and 600 volt generators, this equipment regulating the current for the tram lines in the section and the d.c. current used by elevators in apartment houses. The station will also be equipped with one bank of three transformers of 7,500 k.w. capacity for regulating the private and street lighting.

Port Arthur and Fort William Electric Railway.

The report for 1912 was submitted to the commission operating the joint systems, recently, and shows that 5,447,927 revenue passengers were carried, against 3,863,068 in 1911. There was an increase of 37% in the revenue, 31% in the expenditure, and 48% in the net earnings. The details of receipts and expenses are as follows:

RECEIPTS.

Passenger fares	$212,299.35
Baggage fares	4,026.26
Freight	4,902.46
Advertising	783.50
Power	750.00
Scrap sold	546.81
Mail contract	350.00
Arthur St. branch line	9,336.81
Interest	3,927.91
Total	$236,923.10
1911	$172,976.75

EXPENDITURE.

Arthur St. branch line	$ 5,289.73
Maintenance of way, etc.	18,323.00
Maintenance of equipment, etc.	21,096.05
Conducting transportation	56,459.22
Power purchased	30,813.98
General expenses	10,095.83
Reserve for accidents	12,351.25
Total	$154,429.06
1911	$117,469.67
Net operating earnings for 1912	$82,494.04

The Fort William Electric Railway.

The Mayor of Fort William, Ont., in his inaugural address to the City Council, recently, said:—"During the present year the street railway system will be extended to serve the Islands industrial centre at the Grand Trunk Pacific Ry. terminals, and also through the residential sections of Fairview, Victoria Ave. and Franklin St. The city, during this year, will take over its own street railway, money has been provided by the ratepayers to complete the car barn, supply generators and everything necessary for this work. It is now the duty of the council to plan for the management of this very important utility."

The electric railway in Fort William is now operated by a joint commission appointed by the cities of Fort William and Port Arthur, the whole system being known as the Port Arthur and Fort William Electric Ry.

Electric Railway Finance, Meetings, Etc

British Columbia Electric Ry.—Gross [illegible] had to [illegible]

Calgary Municipal Ry.—[illegible]

Halifax Electric Tramway Co.—The Halifax City Council is asking the Nova Scotia Legislature [illegible] to be fixed by arbitration.

[illegible] authority to acquire and amalgamate the [illegible]

Hamilton St. Ry.—[illegible] mission Co., wrote the Hamilton, Ont., City Council, Mar. 14, stating that the company had no intention of selling the Hamilton St. Ry.

Moncton Tramways, Electricity and Gas Co.—[illegible] ser; other directors:—F. W. Sumner, G. P. [illegible]

Montreal Tramways Co.—[illegible]

[illegible] months ended [illegible]

Moose Jaw Electric Ry.—[illegible]

St. Thomas Street Ry.—[illegible]

Saskatoon Municipal Ry.—[illegible]

Toronto and York Radial Ry.—[illegible] as to the value of the Sunnyside-Humber section of the [illegible] is about to take over, the Ontario Railway and Municipal Board reserved judgment, Mar. 14.

Toronto Ry., Toronto and York Radial Ry. [illegible]

Winnipeg Electric Ry.—[illegible] earnings, $151,965, against [illegible]

Electric Railway Notes

The Saskatoon, Sask., City Council is considering a report recommending the purchase of six new cars for its lines.

The Quebec Public Utilities Commission has approved the Montreal Tramways Co.'s plans for putting its wires underground on certain streets.

The town of Walkerville, Ont., has entered an action against the Sandwich, Windsor and Amherstburg Ry., alleging failure to give the service called for in the franchise.

The Edmonton Radial Ry. is to have the following equipment added during this year:—35 semi convertible p.a.y.e. cars, 2 Simplex dump cars (1 already ordered), one 4,000 gal. sprinkler, 1 line car, 1 bonding car.

The bylaw recently submitted to the taxpayers of Saskatoon, Sask., in connection with the proposed operation of cars on the [illegible] passed by 419 votes to 150, and a Sunday service was started Mar. 9.

The Nipissing Central Ry., which is operated by the Timiskaming and Northern Ontario Ry. Commission, between Cobalt and Liskeard, Ont., has received two electric cars from the Preston Car and Coach Co.

A new schedule of wages for street car men was put in force in Fort William and Port Arthur, Ont., Mar. 1. The new rates of pay are: First six months, 24c. an hour; second six months, 26c.; second year, 28c.; third year, 30c.; fourth year, 32c. The men have a 10 hour day.

The Sandwich, Windsor and Amherstburg [illegible] It is equipped with two Canadian Westinghouse motors, two trolleys, electric heating system, push buttons and leather upholstered seats, and was built by the Preston Car and Coach Co.

[illegible]

The Electric Railway Situation in Montreal.

The Quebec Public Utilities Commission gave judgment, Mar. 14, dismissing the Montreal Tramways Co.'s exception to the Commission's jurisdiction, and directing the company and the city to get together and reach a settlement upon the matters in dispute.

In connection with this discussion of the betterment of service, etc., on the company's lines in Montreal, a report by J. P. Fox of New York, who was engaged by the Montreal Star, was made public Mar. 15. The suggestions made cover the abolition of cross seats; removal of heavy partitions between the rear platform and the body of the car; installation of sliding or folding doors on the steps to prevent the dangerous overcrowding of the rear platform; the operating of every available car; single truck cars should be operated in pairs or connected together by an enclosed centre platform; delays should be minimized; there is no convincing evidence that more streets are needed to make a satisfactory service possible; the double tracking of St. James and Notre Dame Sts. is feasible, and would relieve congestion on Craig St.; a reserve of cars should be provided for rush hours; a new type of double truck car is badly needed, the present type can seat except for local improvements. The M.C.R. only 40 passengers.

Duncan McDonald, formerly General Manager Montreal Tramways Co., is also preparing a report at the request of the Montreal Herald.

The company is doing what it can to come to an agreement with the city council as to the making of such improvements as will provide for a better service. A new proposition was submitted to the Board of Control, Mar. 12, providing for double track work on various lines, and the construction of subways under the G.T.R. and the Lachine Canal, and the extension of a number of lines. The carrying out of the plans would require the expenditure of between $8,000,000 and $10,000,000. There are 200 new cars on order, and the plans would necessitate the ordering of an additional 200. It would require three years to carry out the work suggested. The proposition is still under discussion.

Proposal to Build Electric Railways in Toronto as Local Improvements.

The [illegible] Committee of the Toronto City Council took up the consideration, Mar. 19, of a project for the construction of electric railways upon the local improvement plan. The suggestion is that owners of land in any outlying district of the city who desire street railway accommodation may obtain it by paying for it on the frontage tax system. The estimated cost of street railway construction is $50,000 a mile, including rolling stock; and such lines would be built from outlying parts of the city to the points served by the proposed civic tube railways. To be successful the suggestion must be worked out on comprehensive lines, and would have to lead to the building of lines equally all over the city area, so as not to create [illegible] The report was considered by the City Council Mar. 25.

A plan something upon these lines is being developed in Alberta, where at Calgary and some other cities, the financial interests developing real estate, have built short pieces of line to open up these properties, and have presented the lines to the city to be operated as part of the municipal railway.

Compensation for Carrying Postmen on Electric Railways.

The Postmaster General introduced the following bill in the House of Commons, Feb. 21, and secured its first reading:

"1. Letter carriers in the service of the Post Office Department shall be conveyed on every electric railway in Canada on such terms and conditions and under such regulations as are made by the Postmaster General.

"2. If any company operating such electric railway refuses to carry any such letter carrier at the amount so fixed by the Postmaster General, the company shall refund an amount equal to the difference between the amount so fixed and the amount actually expended for such carriage.

"3. This Act shall be deemed to have come into force on the first day of March, one thousand nine hundred and thirteen."

No notice of the introduction of the bill had been given to the interests affected and the first intimation of it was the announcement in the daily press of its first reading. The Secretary-Treasurer of the Canadian Street Railway Association, Acton Burrows, immediately communicated with the Postmaster General, requesting that the second reading be delayed until a deputation from the Association could be heard, which was granted, and a conference with the Minister was held in Ottawa, Feb. 28, the Association being represented by its President, Patrick Dubee, and the Secretary-Treasurer, who were accompanied by some representatives of member companies who were in Ottawa, including H. H. McLean, K.C., M.P., Vice President, St. John Ry.; Jas. D. Fraser, director and Secretary-Treasurer, Ottawa Electric Ry.; A. A. Dion, President Moose Jaw Electric Ry., and G. Gordon Gale, General Superintendent, Hull Electric Ry.

Mr. Burrows, in addressing the Minister, stated that the electric railway companies had been taken completely by surprise, having received no intimation that such a measure was to be introduced. The Minister, in writing to him answering his request for a conference, had stated that the introduction of the bill had been rendered necessary by the fact that certain electric railways had asked for largely increased compensation, amounting in one case to an advance of over 100%. Mr. Burrows contended that the fact of higher rates being asked did not necessarily mean that they were excessive. There was no desire on the part of the electric railway companies to hold up the government in any way, but investigation had shown that postmen were being carried by many companies at ridiculously low rates and that in some cases they were transported at less than actual cost. He submitted that there was no reason why postmen should be carried less than any other ordinary citizen, for as a matter of fact with their mail bags they took up more room and weighed more. If a lump sum per year was to be paid to the companies it should be based on the value of the tickets the postmen would have to buy if they travelled in the ordinary way. He submitted that it was not fair to the companies to give the Postmaster General the power to decide what should be paid, a power which might under some circumstances be used arbitrarily and unjustly, and he urged that the rate should be settled by conference between the department's officials and the companies and that in case an agreement could not be arrived at the matter should be referred to the Board of Railway Commissioners, an independent body, created by the government, but to which the companies would be perfectly willing to submit. He pointed out that the method of dealing with the steam railways in regard to the transmission of mails could not be taken as a precedent, as of course nearly all of those lines had been subsidized, while only one electric railway had been, all the others having been built entirely by private capital. He urged that the bill be withdrawn, or failing that, that a conference be held between the companies and the department's officials to endeavor to arrive at an arrangement based on the actual cost and value of the service.

Messrs. Dubee, McLean and others supported Mr. Burrows' arguments, and the Postmaster General, in reply, dwelt on the increased rates asked and said that he was not prepared to refer the matter to the Board of Railway Commissioners, giving the extraordinary reason that they would doubtless decide it on the value of the service. In the conversation which ensued it developed that the Montreal Tramways Co., the contract with which had expired and which was carrying the postmen under a temporary arrangement, had notified the Minister that unless its new terms were agreed to it would abrogate the arrangement on Feb. 28, and he admitted that the bill was introduced for the primary purpose of enabling him to meet that situation. He, however, undertook, if the Montreal Tramways Co. would extend its arrangement for another month, to postpone the second reading of the bill, in order that some general arrangement might be discussed. On the following day, E. A. Robert, President, Montreal Tramways Co., agreed to this, and at the date of writing (March 22) no further action had been taken on the bill.

Extensions to Regina Municipal Railway.

Service on the Regina (Sask.) Municipal Ry. was started in 1911. During the spring of that year 10½ miles of street railway track were laid, and in July cars were in operation. The first order for cars was placed in England. Since that time all orders have been placed with Canadian firms, and 16 cars are now on order. During 1912 three and a half miles of additional lines were laid, and during this year it is proposed to extend the railway lines considerably, as they are much in demand. The programme of extensions provides for an additional 14 miles of trackage, which when completed will make 28 miles of lines in service. Despite this big programme of work, the residents in the outlying districts are anxious to secure service at the earliest possible time, and in many cases petitions have been presented to the city council in this regard. The railway during the latter half of 1912 paid almost $2,000 a month above all charges, including debenture interest. Among other things, it is proposed to materially extend the car barns, so as to provide for the additional 16 cars ordered. A total expenditure of $825,000 is provided for this year.

Regina has what is known as a "warehouse area" or "spur track area," where only warehouses or factories may locate. This area, which comprises about 400 acres, is served in certain sections by the C.P.R., in others by the Canadian Northern Ry., and in still others by the Grand Trunk Pacific Ry. The interswitching arrangements have, it is claimed, not always been satisfactory to the manufacturers, and the city council has discussed the question of electrifying the spur track area, and shunting cars by city owned electric locomotives. It is estimated that a good revenue would be derived by this means.

Personal Paragraphs.

W. K. JEFFERY, heretofore acting Manager, Ottawa Car Co., has been appointed Manager.

MRS. J. F. DEADEY, wife of the Superintendent, Mimico Division, Toronto and York Radial Ry., died in Toronto Feb. 26.

P. J. MITTEN, Master Mechanic, International Ry., Buffalo, N.Y., has resigned to enter the Philadelphia Rapid Transit Co.'s service.

H. G. Matthews, General Manager, Quebec Railway Light, Heat and Power Co., has been taking a complete rest necessitated by overwork.

W. O. ROBINSON, has been re-engaged as Manager of the Port Arthur and Fort William Electric Ry., for another year at a salary of $2,800.

H. G. MATTHEWS, General Manager, Quebec Railway, Light, Heat and Power Co., has been absent from his office for some weeks owing to illness.

W. G. ASTLE, heretofore Chief Clerk, car shops, Dominion Power and Transmission Co., Hamilton, Ont., has been appointed Storekeeper, Toronto Electric Light Co., Toronto, Ont.

The Saskatoon, Sask., City Council cancelled the engagement of E. L. WHITE as Manager of the municipally owned street railway, Mar. 31, and placed the line under the charge of Electrical Engineer HANSON.

W. KERLEY, who recently acted as plaintiff in the litigation against the London and Lake Erie Ry. and Transportation Co., for operating its cars on Sundays, died at St. Thomas, Ont., Mar. 14.

PATRICK DUBEE, Secretary-Treasurer, Montreal Tramways Co., and President, Canadian Street Railway Association, left Montreal Mar. 16 and sailed from New York for England on the company's business, expecting to return during April.

ALLAN PURVIS, Manager Interurban Lines, and W. H. Elson, Superintendent British Columbia Electric Ry., returned to New Westminster, B.C., Mar. 5, after an extended trip in the United States to inspect the electric railway systems of a large number of larger cities.

T. AHEARN, President, and J. D. FRASER, Secretary-Treasurer, Ottawa Electric Railway, sailed from New York Mar. 27 on the s.s. Groesser Kurfuerst for Havana, Colon, Panama and Kingston, Jamaica, expecting to return to Ottawa about the middle of April.

Proposed Hydro Electric Power Lines and Railways in Ontario.

A meeting representative of a number of municipalities in Western Ontario, was held at St. Thomas, Mar. 20, for the purpose of discussing the extension of the Hydro Electric Power Commission's power lines through to Windsor and various points in that district, and the construction of electric railways along the power lines, and centering in the larger cities.

Deputations have visited nearly every town between St. Thomas and Windsor, and have secured the passing of resolutions endorsing in general terms, the proposal to erect the power line, and favoring the building of one continuous electric railway from Ottawa to Windsor by the municipalities.

The Mesaba Electric Railway has been completed and placed in operation between Hibbing and Gilbert, Minn.

Marine Department.

Canadian Lake Protective Association's Annual Meeting.

The Association's second annual meeting was held in Ottawa, Feb. 6, James Playfair, of Midland, Ont., occupying the chair. Following are extracts from the report for year 1912:—

It would be improper to attempt to base upon the record of the past season any conclusion whether the Association's work has already shown a decided effect upon the number and extent of the casualties suffered by the Canadian vessels enrolled, because a variety of circumstances may contribute in any one season to raise or lower the total amount of damages incurred. Yet a review of the cases and an examination of the character of the casualties might be expected to afford some indication of the restraining and correcting effect of the committee's supervision if any such effect has resulted, and the facts noted hereafter in this respect will probably be accepted as some evidence.

Before dealing with the actual casualties considered by the committee during 1912 reference must be made to the relations between the Association and the underwriting companies. In 1911 a feeling was expressed by New York underwriters that the Association had not established a valid claim for immediate recognition and would require to put its avowed intentions in practice, and prove its ability to enforce its regulations and rulings, before it could expect to enjoy the advantages given to the Great Lakes Protective Association in the United States; and that because of this feeling and possibly for other reasons which need not be discussed, a preference of ½% from the premium rate was given to members of the Great Lakes Protective Association. On the other hand, underwriters in London gave the Canadian organization full recognition in 1911, and extended identical treatment to the members of both associations. A very low rate of [illegible] was fixed, but in New York a member of the Great Lakes Protective Association could procure cover, by reason of the above preference, at [illegible].

Your Committee at the outset of 1912 [illegible] and for full enjoyment of the best rate, both in New York and London, for all its members. Efforts were made by correspondence to place the leading New York underwriting firms in possession of the true facts regarding the Canadian Association and to show that its work was of a character that demanded full recognition. Able assistance was also given by leading firms of brokers, and finally interviews were arranged with Percy Chubb and Sons and F. Hermann and Co. of New York, at which by direct personal representation of the facts it was possible to establish the Association's claims. It was these interviews which cleared away difficulties and settled the matter satisfactorily. There was at first a contention that it would be necessary for members of this Association to become personally interested in the underwriting risk, even to the small amount of say 5%, but it was readily admitted that the interest of each member in avoiding casualties was already very much more than this small share of the policy risk, and that this question might be very fairly waived. It was also claimed by underwriters that the Canadian Association ought to take some direct part in the exclusion of improper charges from adjustments, and that this could be done even without participating in the insurance losses. It was suggested that in the event of its being found necessary the Canadian Association might in time require the submission of all adjustments to its officers for revision under the direction of skilled assistants, but no definite arrangements were made regarding this. Underwriters also expressed much satisfaction with the statements submitted regarding the Association's plans and its actually achieved results. Only one difference remained and that was the proposal that a preferred list of a few fleets, deemed entitled to a lower premium rate on account of their good record, would be made by underwriters, and that it might not be possible to include any Canadian fleet in this list. The question was discussed at length but remained unsettled, the matter being one entirely within the underwriters' discretion and to be settled by the exercise of an arbitrary judgment.

I. L. Henderson.
General Manager, Montreal Transportation Co., and President Dominion Marine Association.

Shortly after this, the desired recognition was given to the Canadian Association, the announcement as to rates for 1912 being as follows:—1. Values reduced from £11 or $53.50 a ton to £10½ or $51. 2. A rate of 5¾% pro rata agreed to. 3. A list of preferred fleets to be entitled to a rate of 5¼% pro rata. 4. All vessels attaching on and after Aug. 1, ½% additional. All vessels attaching on and after Oct. 1, 1% additional. 5. An additional rate of ½% to be charged on all boats not entered in the Great Lakes Protective Association or Canadian Lake Protective Association. 6. An agreed policy to be used as in previous years. 7. Protection and indemnity clause: —To consult and agree with London underwriters as to form for clause in view of recent workmen's compensation acts.

This was a distinct step in advance and was especially satisfactory, in that it estimated membership in this Assoication as sufficiently important from an underwriting point of view to justify at the outset the maintenance of the same preference as had prevailed in the case of the Great Lakes Protective Association. It is true that the preferred list referred to above did not include any Canadian fleets. It is also understood that no examination of the records of individual Canadian fleets was made with a view to classifying them. Nevertheless, it was stated that this question could be taken up in 1913, and while the Association as a body cannot single out any fleet for preferential treatment, it will doubtless be proper for any individual member to advance any claims he may have for special consideration. It is possible that losses experienced this year by fleets in the preferred list of U.S. tonnage may have some bearing on the consideration of proposals for an extension of this plan.

Towards the close of the season suggestions were made by the Dominion Government for the extension of the period of navigation to Dec. 31, and after some correspondence, in which it was pointed out to the authorities that the extension was dependent upon underwriters, representatives of the Government attended a joint meeting of the Committees of the Dominion Marine Association and of your Association in Toronto during November, when it was agreed that vessel owners would make use of any assistance given by the Government in maintaining aids and breaking ice provided insurance cover could be obtained. It was not possible to do anything with certainty until Nov. 14, when the following extensions were announced by underwriters:—

"Warranted by the assured that loading of cargo is completed prior to midnight, Dec. 4, 1912, Chicago time.

"Warranted vessel sails prior to midnight, Dec. 5, 1912, Chicago time; also warranted not to abandon except in case of actual total loss.

"We reserve the right to withdraw this offer on written notice to you but without prejudice to any actual charters which have been made and have been reported to us in writing prior to our sending such notice.

"Rate, 1% not below Lake Erie.

"Lay up trips on one lake only to ¼ of 1% sailing prior to midnight, Dec. 5, 1912, Chicago time."

On Nov. 22 the extension privileges were extended as far as Ogdensburg at an extra rate of ¾%, and early in December the loading and sailing dates were extended to Dec. 7 and 8 respectively, at a rate of ½% additional to the 1% above mentioned. It is noteworthy that no casualties of any moment occurred under the extended insurance.

Your committee has held regular monthly meetings, and early in the season resolved that a complete record of the casualty reports dealt with at each meeting should be published in a bulletin which should circulate among all members of the Association and all masters of enrolled vessels. These bulletins have been regularly issued each month, and if preserved by members will provide a complete record of the casualties which are reported. One master has filed a protest against the bulletin, but your committee, after due consideration, has resolved to continue the publication of this record, believing that it will assist materially in advancing the Association's policy. An indexed record is kept by the Association in a book, which shows under the name of each master the names of vessels on which he has been employed, the casualties in which he has been involved, and the action taken by the committee in each case. This book is open for inspection at any time, and members can be provided with an extract regarding any master on application therefor. A similar record is kept regarding engineers, and it has recently been resolved that complaints of owners regarding the use of intoxicants by masters or engineers should be noted so that the information will always be available. This decision was made after the submission to the Department of Marine of a complaint regarding an engineer dismissed for drunkenness. The Association was informed that an official investigation would be held if desired with a view to dealing with the man's certificate, but the suggestion was made that possibly the Association's records would serve the desired purpose if members would report complaints freely, and also enquire carefully before engaging men.

The load draught has been watched throughout the season and your committee has been constantly in touch with canal superintendents, although on account of the higher water which has prevailed complaints of overloading have been much less frequent than in 1911. The recommended draught at Sault Ste. Marie Canadian Canal has been fairly observed and no resort to penalties has been necessary. On the St. Lawrence, early in the season, the imposition of fines was threatened, and the Superintendent's action was commended and endorsed by circular letter from your committee to all owners and masters, with good results

Circulars have been issued regarding the method of mooring in canals, the obligation to keep the reversing engines at all times in commission, and various other matters which have been brought directly to your committee's notice by casualties which proved the necessity for better observance of precautions against accident.

A number of accidents due to the breaking of canal gates in the Welland, the Cornwall and the Lachine canals, have convinced your committee of the urgent need of installation of some device to assist lock gates to withstand water pressure when forced slightly out of mitre. The Gowan safety device was demonstrated to your committee, and the Department of Railways and Canals was asked by your committee to make provision as promptly as possible for the installation of some such simple affair on all lock gates. Experiments are now being made, and it is expected that an approved device will be adopted in the near future. Your committee believe that the recommendation should be urgently pressed, and that serious accidents of this nature, which are not always entirely attributable to faults in navigation, will be avoided by the adoption of the protection asked for.

Your committee has also dealt with the question of inattention on the part of bridge tenders on canal bridges, by reason of which a number of avoidable accidents have occurred, and at the instance of the Association, after a number of cases had been reported fully to the Department of Railways and Canals, instructions were given by the Department to all bridge tenders requiring them to respond promptly to whistle signals. At present the Department does not contemplate any change in the canal rule requiring the vessel to stop if a bridge is not open, and the prima facie responsibility for accident therefore remains upon the vessel.

James Carruthers,
President, Richelieu and Ontario Navigation Company.

James Playfair,
Vice President and Managing Director, Richelieu and Ontario Navigation Co.

Throughout the year your committee has followed closely the adopted plan of dealing with all casualties. Reports have been regularly considered, and masters known to be in default in reporting have been required to furnish the necessary detailed information. The records of the committee's work, therefore, furnish an accurate review of the season's casualties. The records show one total loss, this time in the St. Lawrence River, the Keystorm striking in sudden fog and rapidly sinking in deep water near the Sister Islands light. The master was censured by your committee, an official wreck investigation was held, and the master's certificate was suspended for 12 months from Nov. 1, 1912. The certificate of the mate, during whose watch the accident occurred, was also suspended for 24 months from the same date. In addition to this there were three strandings of varying importance. In one case the Leafield was run up on Beausoliel Island by her master, under exceptional circumstances which induced the committee to exonerate him from blame. The other two cases were the Empress of Midland, near Cabot Head in Georgian Bay, and the Rosedale at Detour Point. In both of these instances the committee censured the masters and asked for official wreck investigations, which the Wreck Commissioner proposes to hold while navigation is closed this winter.

Lock gates were broken in three or four instances, but in at least three cases the accidents were due to vessels not enrolled in this Association. In the case of the steamboat Nevada, of this Association, the committee realized that the current at the foot of the lock in question was a contributing cause, but nevertheless censured the master for permitting his ship to approach the gates at excessive speed. The other casualties were on the whole of minor importance. Although there were 19 groundings, many of them had no appreciable results, and very few contributed materially to the season's losses. The same may be said of the collision, the number of these being entirely disproportionate to the small extent of damages occasioned. Twelve of the 27 were casual contacts of vessels in crowded harbors, and 10 of the collisions were in the canals, where heavy damage was not possible. None of the other casualties reported were serious. On the whole, claims upon underwriters will undoubtedly compare very favorably in amount with the records of previous years and probably show a substantial decrease. But for the one regrettable total loss, the total of claims would be comparatively light.

Seven masters have been censured by the committee during the year; one of these on three separate occasions. With respect to that one, an official wreck investigation is also arranged for and will be held shortly. One engineer has been censured for causes contributing to a collision, and another for intoxication. One pilot on the Upper St. Lawrence and one Bay of Quinte pilot have had votes of censure recorded against them, and an official investigation is pending regarding two groundings of the Mapleton in Montreal Harbor when in charge of a branch pilot.

The recognition and the preferential rates given to this Association by underwriters place the organization on a secure footing and bring into membership practically all the tonnage intended. Apparently only one Canadian vessel still relies exclusively upon the Great Lakes Protective Association for the benefits enjoyed.

Reference must be made to the sympathetic attitude of the Dominion Government towards a proposal for the establishment of a Canadian Lloyds. The proposition originated with reference to the lower St. Lawrence, but has been extended to include shipping on the Great Lakes, and an official of one of the departments has been deputed to give it special attention. Statistics are being compiled and various plans for working out underwriting assistance are under consideration. It is quite possible that during 1913 this Association may have an opportunity to consider plans for some new insurance undertaking calculated to give relief from present conditions.

ANALYSIS OF ACCIDENTS, 1912.

Strandings	4
Groundings	10
Collisions	27
Striking locks or gates	7
Striking bridges, docks, piers, harbors and channel banks	11

Propeller wheel broken	5
Rudder broken	1
Damaged machinery	2
Stress of weather, unnecessarily reported	3
Damaged by breaking of lock gates by [illegible]	
Broke anchor flukes attempting to stop vessel when making landing	1
Lightning	1
Fire	1
Total	8[illegible]

The foregoing report was fully considered and unanimously adopted.

The following committee of management was elected for the current year:—L. Henderson, C. A. Jaques, Montreal; S. Crangle, J. T. Mathews, J. W. Norcross, F. Plummer, Toronto; Jas. Playfair, Midland, Ont.; H. H. Gildersleeve, Sarnia, Ont.

The meeting was addressed by R. J. Dale, of Montreal, who outlined a proposal that members should agree to carry a definite percentage of their insurance risks by some form of mutual undertaking which Dale & Co. would be ready to arrange and supervise. Alternative methods of working out the proposal were discussed. Messrs. Prime and Sexton, representing United States underwriters, also addressed the meeting, and after a short discussion regarding the practicability and advisability of any of the arrangements mentioned and a brief argument by A. A. Wright, based on the experience of his own company, the question dropped without any action by the meeting.

The Loss of the s.s Oscar.

Following is a summary of the judgment delivered at Victoria, B.C., by Capt. G. E. L. Robertson, and assented to by A. H. Reed, H. Carmichael and C. A. Wardill, as assessors, in the investigation of the destruction of the s.s. Oscar, owned by the Steamship Oscar, Ltd., Victoria, by the detonation of its cargo of explosives in Nanaimo harbor, Jan. 15.

The explosion occurring on the southeast side of Protection Island, was outside Nanaimo harbor, and in the waters of British Columbia. None of the existing regulations in the Canada Shipping Act, or in the rules and regulations for the government of Pacific Coast harbors in Canada, were broken, and the court advises the Minister of Marine to give the fullest consideration to the question of handling, stowing and transporting explosives in vessels sailing from or arriving at any port in the Dominion, and to make such regulations as would lessen the risk of explosions. The court has no evidence as to the origin of the fire, and no negligence is attributed to the master or any member of the crew, and it expresses its appreciation of the bravery of the master under the trying circumstances.

The Oscar was built at Victoria in 1897, her dimensions being, length 81 ft., breadth 21 ft., depth 7 ft., tonnage 95 gross, 61 register, and she was screw driven with engine of 8 n.h.p. Since this enquiry was held, the regulations governing the management of public harbors, have been amendeed, giving the harbor master power to control vessels loaded with explosive materials, and providing penalties for disobedience. Details of these regulations are given elsewhere in this issue.

The Ocean Freight Line, Ltd., has been incorporated under the Dominion Companies Act, with $100,000 capital, and office at Toronto, to carry on a general navigation business. The company owns the s.s. Moldigaard. The President of the company is T. K. [illegible], New York, [illegible] provisional directors being R. H. Parmenter, A. J. Thomson, W. S. Morlock and N. B. Wormwith, Toronto.

Regulations for Operating Swing Span of Railway Bridge Over Fraser River.

H. H. Gildersleeve.
Manager, Western Lines, Richelieu and Ontario Navigation Co.

T. Henry.
Manager, Eastern Lines, Richelieu and Ontario Navigation Co.

The regulations governing the operation of the swing span of the railway bridge across the Fraser River at New Westminster, were recently authorized by the Board of Railway Commissioners, on the application of the Minister of Railways for British Columbia. Following is a summary of the chief points of the order:

The operation of the pivotal or swing span shall be under the direct control of the Bridge Superintendent, and shall be opened only for the passage, up and down, of such vessels as cannot, by the adoption of a hinge, or similar device, lower their smokestacks, flagpoles or other similar erections and pass under the bridge. The span shall be opened with the least possible delay after receiving three long blasts from the vessel's whistle, excepting when there is a train actually within the home signals of the interlocking system, or in motion toward the bridge between the distant and home signals, and then not till after the train is clear of the home signals at the opposite end of the bridge, provided, however, that when two trains are approaching the bridge within the distant signals, when the vessel's signal is given, a train of the superior class shall have preference, and shall be permitted to cross the bridge, the inferior train being held until the vessel giving the approach signal shall have passed, and the bridge is again closed. A double arm semaphore signal shall be provided on the top of the swing span, with lamp for signalling by night, the signal for the bridge being closed will show the semaphore arms at right angles to the pole, and at night, a red light, and the signal for the bridge being open will show the semaphore arms in the upper quadrant, that is, in a vertical position, during the day, and a green light at night. During foggy weather on receipt of a vessel's signal on the bridge, a fog horn will be sounded, two long blasts and repeated at intervals of 10 seconds, when the bridge is closed, and three long blasts, repeated at similar intervals, until the vessel has cleared the bridge, when the span is open. Any failure to comply with the regulations will be sufficient cause for the refusal to open the span, but the master of any vessel may make a protest in writing to the Bridge Superintendent, who will refer it to the harbor master, who together shall consider the matter and give a decision within one week, but in the meantime, the bridge shall be opened to allow the vessel to pass. Notwithstanding any of these regulations, the bridge tender may, in his discretion, direct traffic, either across the bridge, or on the water, through the bridge, and no vessel shall attempt to pass the bridge until the bridge tender shall give the necessary clear signal. An automatic gauge shall be maintained at each end of the swing span, so that it may be seen from any vessel approaching the bridge, indicating at all stages of the tide, the clearance between the level of the water and the underside of the lowest member of the structure. During foggy weather, a fog signal shall be sounded continuously, from the bridge, the sound being distinct from the other signals indicating the position of the swing span, before mentioned.

A system has been worked out in Germany, which it is hoped will, at any rate, minimize erosion in canals caused by the wash from vessels passing through. The canals are built with the bottoms sloping toward the centre, and the vessels are built with twin propellers and two rudders. The effect on erosion has been demonstrated to be considerable, and in addition it has also been shown that the minimum wearing effect of the propellers is reached when they are revolved in opposite directions to each other, the number of revolutions for the same speed being about 15% less, than when revolved in the same direction as each other.

The Montreal Warehousing Co. is reported to be considering the question of replacing its elevator at the foot of Colborne St., Montreal, with an up-to-date structure of greater capacity, in order to cope with the increased grain requirements of the port.

Two fatal, and 14 non fatal accidents were reported during January in connection with the navigation of Canadian waters. Of the fatalities, one employe was drowned in the sinking of a vessel, and another was killed by being struck by a swinging sling of hoisted goods.

The Richelieu and Ontario Navigation Co.'s Reorganization.

Following on the changes in the directorate made at the recent annual meeting, as announced in Canadian Railway and Marine World, for March, the company's vessels have been separated into divisions, as follows:

EASTERN DIVISION, covering the operation of the steamboats Beaupre, Belleville, Berthier, Boucherville, Longueuil, Montreal, Murray Bay, Pandora (tug), Quebec, Rapids King, Rapids Prince, Rapids Queen, St. Irenee, Saguenay, Tadousac and Three Rivers, all formerly owned by the R. & O.N. Co.

THOUSAND ISLAND AND ST. LAWrence Division, covering the operation of the steamboats America, Jessie Bain and Pierrepont, formerly owned by the St. Lawrence River Steamboat Co., and the steamships New Island Wanderer, Newsboy, Ramona, St. Lawrence and Thousand Islander, formerly owned by the Thousand Island Steamboat Co.

WESTERN DIVISION, covering the operation of the steamboats Kingston, Rochester and Toronto, formerly owned by the R. & O.N. Co.

NIAGARA-TORONTO DIVISION, covering the operation of the steamboats Cayuga, Chicora, Chippewa, Corona and Ongiara, formerly owned by the Niagara Navigation Co.

HAMILTON DIVISION, covering the operation of the steamships Macassa and Modjeska, formerly owned by the Hamilton Steamboat Co., and the steamship Turbinia, formerly owned by the Turbine Steamship Co., both of which companies were absorbed into the Niagara Navigation Co.

The vessels owned and operated by the Inland Lines, Ltd., and the Northern Navigation Co., will be operated as heretofore, each company maintaining its own organization under the central management. The following appointments have been made:—

JAMES PLAYFAIR, Vice President, has also been appointed Managing Director. Office, Montreal.

J. R. BINNING, one of the directors, has been elected Chairman of the Executive.

C. J. SMITH, General Manager, having resigned, that position has been abolished.

J. I. HOBSON, heretofore Treasurer, Inland Lines, Ltd., Hamilton, Ont., has been appointed Comptroller and Treasurer R. & O.N. Co., vice J. A. Villeneuve. Office, Montreal.

F. P. SMITH has been reappointed Secretary. Office, Montreal.

H. H. GILDERSLEEVE, heretofore Manager, Northern Navigation Co., Sarnia, Ont., has been appointed Manager, Western Lines, R. & O.N. Co. Office, Toronto.

T. HENRY, heretofore Traffic Manager, has been appointed Manager, Eastern Lines. Office, Montreal.

GILBERT JOHNSTON has been reappointed Mechanical Superintendent. Office, Montreal.

L. A. W. DOHERTY, heretofore Traffic Manager, Inland Lines, Ltd., Hamilton, Ont., has been appointed Freight Traffic Manager, R. & N.O. Co. Office, Toronto.

H. FOSTER CHAFFEE, heretofore General Passenger Agent, Western Lines, Toronto, has been appointed Passenger Traffic Manager. Office, Montreal.

J. F. PIERCE, heretofore Travelling Passenger Agent, Boston, Mass., has been appointed Assistant General Passenger Agent and General Baggage Agent. Office, Montreal.

G. PUJOS has been reappointed Excursion Agent in charge of Ticket Department. Office, Montreal.

J. V. FOY has been reappointed District Passenger Agent. Territory, Kingston and west in Canada, Michigan, Illinois and the Northwestern States. Office, Toronto.

H. Foster Chaffee,
Passenger Traffic Manager, Richelieu and Ontario Navigation Co.

H. D. PATERSON, heretofore Travelling Passenger Agent, Toronto, has been appointed General Agent, Passenger Department. Office, Toronto.

S. J. MURPHY, heretofore Excursion Agent, Niagara Navigation Co., Toronto, has been appointed Travelling Passenger Agent and Excursion Agent, with jurisdiction over all excursion business for Niagara Navigation Co. Office, Toronto.

L. A. W. Doherty,
Freight Traffic Manager, Richelieu and Ontario Navigation Co.

J. F. DOLAN, heretofore City Passenger Agent, Montreal, has been appointed District Passenger Agent, Boston, Mass., vice H. D. Paterson, promoted. Territory, Montreal and east in Canada, and the New England States.

J. W. CANVIN has been reappointed District Passenger Agent, Alexandria Bay, N.Y. Territory, Montreal to Kingston in Canada, New York State east to Rochester, Eastern Pennsylvania and the Atlantic seaboard.

W. F. CLONEY, heretofore District Passenger Agent, Rochester, N.Y., has been appointed District Passenger Agent, Buffalo, N.Y. Territory, Rochester and west in New York State, Western Pennsylvania, Central and Southern United States.

J. V. O'DONAHOE, heretofore Manager's Assistant; A. ANGSTROM, Naval Architect, and J. E. COOKSON, Baggage and Claims Agent, are reported to have resigned.

NORTHERN NAVIGATION CO.—PETER PATON, heretofore Assistant to the President, has been appointed Manager, vice H. H. Gildersleeve, transferred to R. & N. Co. service. Office, Sarnia, Ont.

C. A. MACDONALD continues as Assistant Manager and Treasurer. Office, Collingwood, Ont.

E. W. HOLTON, heretofore Eastern Passenger Agent, has been appointed General Passenger Agent. Office, Sarnia, Ont.

R. V. ROBINSON, heretofore Eastern Freight Agent, has been appointed General Freight Agent, in charge of Freight Traffic and Claims. Office, Sarnia, Ont.

W. J. McCORMACK, heretofore Agent at Sarnia, Ont., has been appointed Superintendent, with jurisdiction over Sarnia terminals and operation of Lake Superior vessels. Office, Sarnia, Ont.

The President, Jas. Carruthers, has issued a circular recalling all annual passes for 1913 issued by the former management, stating that on their return new passes bearing authorized signature will be issued in lieu of them, and that only annual passes bearing the written signature of the President, or the Vice President and Managing Director, will be honored. Another circular by the President says: "The officer authorized to issue or request annual or trip transportation on account of this company is Jas. Carruthers, President. The officer authorized to countersign annual transportation, or requests for same, is Jas. Playfair, Vice President and Managing Director. The officers authorized to countersign trip transportation, or requests for same, are Jas. Playfair, Vice President and Managing Director; H. H. Gildersleeve, Manager Western Lines; T. Henry, Manager Eastern Lines, and F. P. Smith, Secretary. All annual and trip transportation will be requested by and issued from this office."

The Nova Scotia Steel and Coal Co. has the following vessels under charter for the present season; half of these vessels will be used in the coal trade, and the remainder in the foreign ore trade:—August, 9,300 tons; Beatrice, 940 tons; Gladstone, 7,950 tons; Jethou, 7,080 tons; Othello, 6,360 tons; Tellus, 13,000 tons; Themis, 13,000 tons; Victoria, 1,300 tons; Wacousta, 5,650 tons; Wagama, 8,000 tons; Wascana, 8,000 tons; Wasis, 580 tons.

The Superior Sand and Towing Co., recently incorporated at Fort William, has acquired the steam tug Bennett, which will be operated during the season with the scow Derry. The equipment will be increased as the business demands.

The Department of Naval Service is considering the erection of wireless telegraph stations at Pas, Man., and the proposed terminus of the Dominion Government railway on Hudson Bay.

Proposed Dyke in Livingstone Channel, Detroit River.

[illegible] this way the cross current now flowing through this section of the river into the lower part of the new channel. Objection [illegible] burg channel will be much increased and that [illegible] dian master has [illegible] sented and produce expert evidence on that [illegible]

[illegible] new channel, on the ground that [illegible]

[illegible]

[illegible]

[illegible] did not fear the cross current now flowing in [illegible] evidence closely agreeing with that of the [illegible] Corps, but differing as to the advisability of building the dam until the Chicago Drainage Canal question is settled, and contending that it is inadvisable to interfere with levels or build compensating works until the withdrawal of water at Chicago is confined to proper limits now [illegible]

Mr. King, in addressing the commission, made it clear that the opposition of the [illegible] on any local considerations; neither was it its [illegible] U. S. government in the improvement of navigation on the Detroit River. The asso[illegible]

[illegible]

in the development of international waters. [illegible] make the construction of a dyke necessary. [illegible] levels [illegible] water[illegible] canal at Chicago, [illegible]

The Commission reserved its decision.

[illegible]

A Ship Captain's Responsibility When a Pilot is on Board.

In Canadian Railway and Marine World for February, some comment was made in connection with various criticisms of recent judgments by the Dominion Wreck Commissioner, on the question of the responsibility of a steamship's captain during the period when a pilot was on board, and the Wreck Commissioner's opinion, and the section of the Pilotage Act, governing this point, were quoted.

This matter was dealt with during the [illegible] St. Lawrence pilotage system, at Montreal, early [illegible] in response to a question, stated that he considered himself, when on board, in full charge of the navigation of the vessel, though he made no claim to interfere with the master in any other department, and gave an instance, which occurred in the St. Lawrence some years ago when he was piloting a vessel, when he gave orders to anchor the vessel during the night, the captain insisting that he should proceed to Quebec and ordering that the anchor be raised. This order the pilot countermanded, [illegible] to take the vessel further that night. For this, he stated, he was [illegible] by the head of the line and [illegible] captain [illegible] with his navi[illegible] Montreal and Quebec.

[illegible] one of the commissioners stated that the commissioners' understanding of the law is that [illegible] so the pilot is only on board in an advisory capacity, and the captain is the person responsible, the pilot merely giving him the benefit of his local experience.

In [illegible] Pilot Anger, said that if he were drunk or otherwise incapable, the captain would have the right to order him off the bridge and take [illegible] a captain refused to allow his orders to be carried out, he would leave the bridge of his own accord and leave the responsibility with the captain.

From the point of view of those officially connected with navigation interests, it is [illegible] on the captain's part, that he is in full charge at all times, and that for all practical purposes [illegible] 473 and 474 of the Canada Shipping Act, which [illegible]

"473. [illegible] of any ship shall, in any case, be compelled to employ or to give his ship into the charge of a pilot, either on the ground of his being compelled to pay pilotage duties to any person, or otherwise."

"474. Nothing in this part shall exempt any owner or master of any ship from liability for any loss or damage occasioned by his ship to any person or property, on the ground of either such ship being in the [illegible] loss [illegible] by the act or [illegible] other grounds."

So far as lake navigation is concerned, captains are definitely instructed on this [illegible] of the vessel, and responsible for anything that may occur in the course of navigation, [illegible] dues, whether they take a pilot or not, a [illegible] cation is strongly opposed to.

[illegible] considered in a Canadian court.

Winter Storage of Grain in U. S. Vessels at Port Arthur and Fort William.

F. King, Counsel, Dominion Marine Association, Kingston, Ont., went to Winnipeg in the middle of February to meet the Dominion Grain Commission with reference to the coasting laws and the winter storage of grain in United States vessels at Port Arthur and Fort William, Ont. The Commission has now definitely stated that the construction to be placed upon the concessions granted in favor of U. S. vessels at the close of Nov., 1912, should apply only to vessels loaded after Dec. 10, and as to which no original charter had been made prior to Nov. 29. The intention of the concessions was to bring in more tonnage for storage, so that there is no logical reason for construing the concessions in favor of vessels which were already under charter on Nov. 29. It is said that no cancellation of such charters and making of new charters will suffice to bring such vessels under the terms of the privileges granted.

Incidentally the Lake Shippers Clearance Association came under review by the Commission, and a brief statement was made of the difficulties between that Association and the Dominion Marine Association. The Commission agreed to hold a session in the East on its return from Vancouver to hear from individual vessel owners just what they have to say.

Coal vs. Oil as Fuel on Steamships.

The following report by G. W. Dickie, and published in the Vancouver Province, on the comparative costs of coal and oil as fuel on two of the C.P.R. British Columbia Coast Service steamships, is of interest, in view of the number of vessels which have recently been built to consume liquid fuel, or have been changed so that either of the two fuels may be used. The costs of coal and oil for the s.s. Princess Victoria are given as follows:—

Coal.	Per day.
100 tons at $4.50	$450.00
9 firemen at $55 a month each	16.50
9 trimmers at $45 a month each	13.50
Food for 18 men	7.56
Total	$487.56
Oil.	
344.17 barrels, at 90c	$314.25
6 firemen	11.10
Food for 6 men	2.52
Total	$327.87

The costs for the s.s. Princess Charlotte, a larger vessel and of greater horse power, are as follows:—

Coal.	Per day.
100 tons at $4.50	$450.00
13 firemen at $55 a month each	23.80
10 trimmers at $45 a month each	15.00
Food for 23 men	9.56
Total	$498.36
Oil.	
344.17 barrels at 90c	$314.25
6 firemen	11.10
Food for 6 men	2.52
Total	$327.87

Canadian Marine Casualties in 1912.—In response to question in the House of Commons recently respecting casualties to Canadian shipping at sea and on the inland waters, the Minister of Marine stated that during 1912, there were 104 casualties at sea, and 4 on inland waters, to sailing vessels, connected with which 12 lives were lost at sea and none inland; and there were 52 casualties at sea and 30 inland, to steam vessels, in connection with which 2 lives were lost at sea, and 14 inland.

The St. Lawrence Pilotage Investigation.

The investigation into matters concerning the pilotage of the St. Lawrence, for which the Government recently appointed Commander H. St. G. Lindsay, Dominion Wreck Commissioner; T. Robb, Manager and Secretary, Shipping Federation of Canada, and A. Lachance, Chairman, Quebec Pilotage Commission, as a commission, was concluded at Quebec, Mar. 11. Sittings had been held at Montreal and Quebec, and considerable evidence from those connected with various shipping interests, as well as from pilots, was taken.

The chief point of discussion towards the end of the enquiry, appeared to be whether the Corporation of Pilots should be abolished, and as to the control of pilots generally, it being contended that the authority presumed to be invested in the Minister of Marine, was largely offset by the powers granted to the Corporation of Pilots by charter. This, it was suggested, might be overcome to some extent by placing the pilots under a salaried officer of the Department of Marine. It was also pointed out that the Corporation was, apparently, governed by two sets of bylaws and rules, and there was considerable conflict under what was in reality a dual control. Other matters taken up were, the apprentice system, the double language qualification, sight tests, and age limit for service.

On the question of dual control, it was contended on behalf of the pilots, that there was no such dual control, as the Canada Shipping Act made it plain that the control lay with the Department of Marine. This was, however, controverted.

Prior to 1903, the pilotage authority for the pilotage district of Montreal, was the Montreal Harbor Commission, but in that year it ceased to be the authority, all the powers with which it was vested under either the Pilotage Act, or the Montreal Harbor Commissioners Act, being transferred to the Minister of Marine. In 1905, the powers vested in the Quebec Harbor Commissioners, as the pilotage authority for the pilotage district of Quebec, were transferred to the Minister of Marine, with the exception that the Minister was not authorized to sit as a tribunal for the trial of offences of which pilots may be accused before the pilotage authority, except in any cases not provided for in the Shipping Casualties Act of 1901.

Dominion Government Lighthouse and Buoy Steamship Estevan.

The steamship Estevan, which was recently built at Collingwood, Ont., for the Dominion Government lighthouse and buoy service on the British Columbia coast, arrived at Victoria, B.C., Mar. 4. The voyage of about 17,000 miles was commenced Nov. 4, 1912, and was completed without accident of any kind.

The vessel is built of steel, to be equal to class 100 A1 at Lloyd's, with double bottom from peak to peak, with water ballast, and divided into seven water tight bulkheads, and the general construction has been arranged to make the vessel suitable for navigation through 12 in. ice, if necessary. There are four decks, and the general equipment includes electric light, with 25,000 c.p. searchlight, 2 surf boats, captain's dinghy, one steam launch, boat hoisting winch, a five barrelled 20 ton, and 2 two ton, double barrelled steam winches and wireless telegraph equipment.

The propelling machinery consists of two sets of inverted, vertical, direct acting, triple expansion, surface condensing engines, capable of developing sufficient horse power to make a speed of 12 knots an hour, running at 130 revs. a minute, supplied with steam by two cylindrical single ended boilers, at 180 lbs., and fitted with forced draught. The propellers are of the three bladed, built up type, and are arranged to turn outward when the vessel is going ahead. The approximate general dimensions are:—Length between perpendiculars, 200 ft.; moulded breadth, 38 ft.; depth, moulded to main deck, 10 ft.; depth to lower deck, 10 ft.; main to bridge deck, 7 ft. 11½ inches; mean loaded draught, 11½ ft., with deadweight capacity of 375 tons, and coal capacity of 269 tons.

LAKE GRAIN SHIPMENTS IN 1912.

The following statement, prepared by F. Symes, acting Grain Inspector at Fort William, Ont., shows the bushels of grain shipped from Fort William and Port Arthur, during the navigation season of 1912, from Apr. 23 to Dec. 17. The figures in each column after the period denote lbs.

Canadian Ports:—	Wheat.	Oats.	Barley.	Flax.
Collingwood	172,308.00	137,260.10	....	....
Depot Harbor	2,644,658.00	783,647.03	142,601.00	62,539.36
Goderich	5,870,657.30	3,150,557.28	247,129.41	476,810.25
Kingston	6,065,185.30	4,156,755.14	508,452.18	243,502.12
Meaford	600,731.20	223,804.22	....	....
Midland	882,689.40	879,551.09	82,621.18	....
Montreal	9,542,565.50	4,682,230.07	330,366.03	384,346.06
Point Edward	1,651,837.00	598,864.24	81,951.24	61,429.12
Port Colborne	11,068,310.00	1,130,810.15	47,350.06	....
Port McNicoll	5,957,731.10	2,830,276.19	103,512.33	132,285.13
Port Stanley	144,765.50	56,534.24	....	....
Quebec	....	256,901.00	....	....
Seaforth	5,000.00	....	....	....
Silver Island	180.50	....	....	....
Thorold	91,225.40	....	....	....
Tiffin	8,787,155.30	2,421,025.05	1,034,019.46	17,335.40
	53,485,001.50	21,317,300.10	2,878,004.45	1,369,248.32
Foreign Ports:—				
Buffalo	35,584,307.10	2,297,188.01	1,473,871.24	5,271,762.07
Chicago	85,233.20	....	....	204,179.01
Duluth	85,529.20	....	....	433,703.50
Erie	3,090,020.50	....	84,867.27	611,868.16
Fairport	2,958,586.10	....	....	213,853.52
Port Huron	2,715,505.40	115,890.30	580,117.15	62,488.12
Toledo	....	....	....	156,516.47
	44,519,182.30	2,413,078.31	2,138,856.18	6,954,372.17
Totals	98,004,184.20	23,730.388.07	5,016,861.15	8,323,620.49
1911	56,756,440.40	16,344,401.25	1,600,331.46	3,090,718.04

Regulations Governing Canadian Public Harbors

[illegible]

Dominion Legislation Respecting Wireless Telegraphy on Vessels

[illegible]

[illegible] steamer, whether registered in Canada or not—

[illegible]

[illegible] through stress of weather, or for repairs.

Canadian Notices to Mariners.

[illegible]

[illegible] mouth range lights.

[illegible]

42. Feb 20. Ontario, Lake Huron, north channel, Little Current, Spider Island, light improved.

[illegible] coast, Bay of Fundy, L'Etang harbor entrance, Pea Point lighthouse, change in [illegible]

[illegible] Pointe [illegible] north [illegible] color of [illegible] range lights.

[illegible] Miramichi Bay, outer bar, can buoy replaced by bell buoy.

46. Feb 26. Nova Scotia, southwest [illegible] whistling buoy, correction.

[illegible] rence, Portneuf en bas, change in position of [illegible]

[illegible] westward of St. Roch shoals, amended po[illegible]

49. Mar. 10. Ontario, Lake Superior, Thunder Bay, Port Arthur harbor, rearrangement and numbering of buoys.

50. Mar. 11. Quebec, Ottawa River, chart of the eastern portion of the Lake [illegible]

[illegible]

[illegible] nt to [illegible] Etc., [illegible]

[illegible] Bay of Fundy, [illegible]

[illegible] Nova Scotia, south coast, [illegible]

[illegible] Nova Scotia, Cape Breton [illegible]

[illegible] Island, Cape North light station, fog alarm [illegible]

[illegible] caution.

[illegible] light, alteration [illegible]

[illegible]

Proposed Compulsory Radiotelegraphy for Coast Steamships.

At a [illegible] B.C. [illegible] proposal that vessels carrying more than [illegible] of the B. C. coast, be compelled to instal a radiotelegraph system, and as a result, the matter was placed before the Minister of [illegible] that it be incorporated in the bill respecting radiotelegraphy then being dealt with. [illegible] financially unable to comply with same, it [illegible] amendment at present, but the matter [illegible]

Atlantic and Pacific Ocean Marine.

[illegible] that during the forthcoming St. Lawrence season they will augment their Canadian ser[illegible]

R. B. Stoker, Managing Director, Manchester Liners, Ltd., Manchester, Eng., has also been elected Chairman of the Board, vice Lord Furness, deceased.

It is announced that the Cunard Thomson Line s.s. Andania will make her maiden voyage from Southampton to Quebec, sail[illegible]

The British s.s. Evelyn, which was recently wrecked at the entrance to Louisburg harbor, N.S., has been sold to Brister and Sons, Halifax, for breaking up.

[illegible] loaded 6,600 tons of sacked Canadian wheat at Vancouver, B.C., for Yokohama. This is reported to be the first of a number of similar shipments to be made during this year from that port.

The hearing at Osaka, Japan, recently, of the causes leading to the collision of the [illegible] Jingu Maru, in Moji harbor, last July, re[illegible] severely reprimanded.

The Montreal Board of Trade has recom[illegible] lish a steamship service between Canada and the Argentine, making Montreal, Quebec, Halifax, and possibly Sydney the Canadian ports, and calling at Bahia, Santos, [illegible]

The C.P.R. s.s. Empress of Russia, which [illegible] on her maiden trip, will arrive at Vancou[illegible] will probably sail from Liverpool, about [illegible]

[illegible]

Daily papers, early in March, gave currency to what purported to be a dispatch from London, Eng., concerning the reconstruction of the White Star s.s. Olympic with an inner shell, and stated "the nature of the work has thus far been kept secret." As a matter of fact, there has been really no secrecy about the matter, as official descriptions of the work appeared in Canadian Railway and Marine World some months ago.

The Montreal Chamber of Commerce has recorded its opposition to the proposed scheme for a fast short route between Great Britain and Canada, from the west coast of Ireland to a port in Labrador, chiefly on the ground of the transport difficulties involved. It was claimed that, if a new route were required, the shortest and most convenient route would be between Liverpool and Halifax, but the members themselves prefer that Montreal should be the port.

J. Thom, Passenger Traffic Manager, White Star-Dominion Line, Montreal, has also been appointed local agent of the Austro-Americana Line, which is to be run this season between Trieste, Austria and Canadian ports. It is stated that all vessels will call at Naples each way. The first sailing from Trieste was the Arabiana, which left Mar. 15 for Portland, Me., subsequent sailings being to Quebec and Montreal. The Arabiana has been secured on time charter from Furness, Withy and Co.

The Ulster Steamship Co., operating the Head Line, in its annual report, shows net earnings of £74,462 for the year ended Jan. 31. The net balance to the credit of profit and loss after paying interest, etc., is £69,594, from which £26,167 has been deducted for depreciation. Dividends for the year were 5% free of income tax, with a bonus of £1 a share, leaving £3,551 to be carried forward to the current year. A call of £1 a share was also made, this amount being payable with the bonus declared.

The Elder Dempster Co. will, it is reported, discontinue its service between Canada and Mexico on the expiry of the Mexican mail contract in April. The company has used its steamships Bornu and Sokoto in this service for some time, and it is probable that they will return to England at an early date. D. W. Campbell is reported to have stated that an increasing number of tramp vessels would be consigned to the company during the forthcoming season, and these would take care of the imports of asphalt, etc., from Mexico.

The Central Vermont Transportation Co.'s s.s. Narragansett was launched at Wilmington, Del., recently, and will shortly be followed by a sister vessel, named Manhattan. They are 336 ft. long and 63 ft. wide at the guards, with six decks, and accommodation for 700 first class passengers and 500 tons of express freight. They are of steel, with twin screws, and will be equipped with engines of 480 h.p., supplied with steam by three boilers, and have a gross tonnage of about 5,000. These vessels will ply between Providence, R.I., and New York.

It is announced that the C.P.R. transpacific steamship service, which will be put in operation on the arrival of the two new vessels, the Empress of Asia and the Empress of Russia, will be a fortnightly one, each of the vessels named making the round trip in two months, while the Empress of Japan, Empress of India and Monteagle, will run in the intervals. Capt. Robinson, of the Empress of Japan, has been appointed to the command of the Empress of Asia, and W. D. Hopcroft, chief officer, has been promoted to the command of the Empress of Japan. Capt. Beetham, of the Empress of India, will command the Empress of Russia.

The sailing vessel Scotia is being equipped for patrolling the waters off the northeast coast of the continent, as the result of a recommendation of the Merchant Shipping Advisory Committee, with a view to observing the movements of ice during its southward flow. The vessel will have a wireless telegraph installation capable of communicating with the stations at Labrador and Newfoundland. It is anticipated that the stationing of this vessel in the ice region will contribute greatly to the safety of vessels using the North Atlantic routes, and prevent the possibility of such an accident as occurred to the s.s. Titanic last year, if the warnings of the proximity of ice are heeded by captains.

Maritime Provinces and Newfoundland.

T. Gilbert, at one time one of the leading shipowners of St. John, N.B., died there, Mar. 11, aged 92.

Dredging in Courtenay Bay, St. John, N.B., is to be resumed about Apr. 1, in connection with the large improvement works there, for which Norton Griffiths and Co. have the contract.

The Nova Scotia Steel and Coal Co. has secured the steamships Wagoma and Wascama, under charter for 10 years, with the option of purchase. They have coal carrying capacity of 8,000 tons each.

Press reports from Fredericton, N.B., Mar. 18, stated that the Provincial Government had adopted the principle of granting financial aid to Norton Griffiths and Co., in connection with the development work at Courtenay Bay, St. John, for the establishment of a shipbuilding plant there.

Tenders for the construction of terminals at Carelton Point, P.E.I., are to be received by the Department of Railways and Canals, Apr. 1, and tenders for the construction of the terminals at Cape Tormentine, N.B., will be received to Apr. 15 in connection with the projected car ferry service to connect the Intercolonial Ry. with the Prince Edward Island Ry.

Province of Quebec Marine.

Capt. J. D. Weir has been appointed Superintendent of Construction and Lights, Department of Marine, Montreal.

Work has been commenced on the foundation of the Harbor Commission's elevator in Quebec harbor. The contractors are the Canadian Stewart Co.

Jas. Carruthers, President, and J. R. Binning, director, Richelieu and Ontario Navigation Co., inspected the company's workshops, plant, and vessels at Sorel, Mar. 7.

The Sincennes-McNaughton Line's steam tug Aurelie G., which was to have been delivered by the British builders last year, but which was delayed owing to labor troubles in Great Britain, is expected to arrive in Montreal towards the end of May. She will cross the Atlantic under her own steam.

Rapid progress is being made on the various works on the Louise docks and river front near the Customs House in Quebec. The concrete foundations of the freight station at the foot of St. Paul St., and the Commission's offices were expected to be completed ready for the erection of the steel frame work at the end of March.

The Minister of Public Works stated in the House of Commons, recently in reply to a question, that no tenders had been received relating to the construction of a dry dock at Quebec or Levis; tenders had been received for the lockage of the St. Charles River, but names of tenderers could not be given until the contract had been awarded.

The Montreal Harbor Commission has had under consideration plans for the provision of a new entrance to the Lachine Canal, but it is stated that the work, which would be undertaken in conjunction with the Department of Railways and Canals, may not be gone on with this year. Plans for this year's work cover the completion of the addition to elevator no. 1, and alterations to the Victoria pier, with general repairs and developments.

The Quebec and Levis Ferry Co. will operate two car ferry steamboats between Quebec and Levis during this year. The vessel John R. Langford, recently purchased in Ogdensburg, N.Y., is being equipped at Quebec with hydraulic and other machinery suitable for the work, and when complete she will, with the companys other vessel, John S. Thorn, be placed in operation conveying cars across the river for transhipment to the south shore lines.

At a recent meeting of the Quebec Board of Trade, a letter was read from St. G. Boswell, Chief Engineer of the Harbor Commission, stating that the harbor improvement work to be undertaken immediately consisted essentially of the building of a quay wall 2,900 ft. long parallel to the southern wall of the Louise Embankment. This wall, with the 40 ft. already built, will give a continuous water front of 3,300 ft., which is to be dredged to give 35 ft. of water at low tide for about 1,200 ft. out.

Ontario and the Great Lakes.

Forwarders, Ltd., operating vessels in the grain trade, etc., into Kingston, has changed its head office from Kingston to Ottawa.

The s.s. Turret Crown has been thoroughly overhauled during the winter, and a new Scotch marine boiler installed, at Port Arthur.

The act granting an extension of time for the construction of the proposed Montreal, Ottawa and Georgian Bay Canal, has been assented to.

Press reports state that the Algoma Central and Hudson Bay Ry. will spend $400,000 on the provision of dock and terminal facilities for its railway lines and steamships at Sault Ste. Marie during this year.

The contract for the improvement of Hamilton harbor, for about $178,000, has been awarded to Taylor, Poupore, Hennessy and Dwyer, Ottawa. It is stated that work will be commenced immediately.

The Dominion Transportation Co.'s steamboat Manitou, which was damaged by fire at Owen Sound recently, and afterwards sank, has been raised. Tenders for repairs will shortly be asked for.

J. L. Weller, Chief Engineer, Welland Canal, is visiting Panama to study the method of dealing with quicksand, etc., as adopted there, as it is reported that in the borings on the route of the Welland quicksand has been encountered at several points.

Capt. F. Traunche, a lake captain of the early days of navigation, who died recently at Detroit, Mich., aged 80, was buried at Goderich, Mar. 4. He was connected with navigation on Lake Huron and Georgian Bay, all his life, and commanded a schooner at the age of 16.

The claims of the Dominion Transportation Co. having been adjusted in connection with the fire damage to its steamboat Manitou, the vessel is being repaired by R. Morrel, Collingwood, and it is said that it will be ready for operation by the opening of navigation.

The Superior Sand and Towing Co., Ltd., has been incorporated under the Ontario Companies Act, with $100,000 capital, and office at Fort William, to carry on a general towing, dredging and wrecking business. W. McCall, G. A. McLaurin, A. I. Perry, H. L. Palmer, Fort William, and G. Fineout, Port Arthur, are the incorporators.

A. V. Collins, heretofore chief clerk to Traffic Manager, Canadian Lake Line, Toronto, has been appointed General Freight Agent, in charge of all matters pertaining to traffic, rates and claims, with office at Toronto. The position of Traffic Manager, heretofore occupied by H. A. Young, has been abolished.

The Gilchrist Transportation Co.'s fleet of lake steamships, consisting of about 48 vessels, has been sold by auction by the Receivers, and it is reported that the amount received approximated $3,500,000. Several of the vessels owned by this company have, at various times, been acquired by Canadian companies operating on the Great Lakes.

The Keystone Transportation Co.'s s.s. Keystorm, which sank about 12 miles west of Brockville in Oct., 1912, has been finally abandoned. A diver was recently sent down, and his report was to the effect that the vessel was lying on her starboard side in deep water, with her bow ripped for about 60 ft., and he considered it would not be possible to raise her.

J. S. Robertson, of Owen Sound, is reported to be forming a company for the establishment of a steamship service between Owen Sound and Fort William. On his recent return from Cleveland, Ohio, he is reported to have stated that he had secured options on two vessels from Hutchinson and Co., there, and that he hoped to take up the options and to have the line in operation early in the spring.

The U.S. Lake Survey reports the levels of the Great Lakes in feet above tidewater, for February, as follows:—Superior, 601.61; Michigan and Huron, 579.96; Erie, 572.39; Ontario, 246.75. As compared with the average February levels for the past 10 years, Superior was 0.23 ft. below; Michigan and Huron, 0.10. ft. below; Erie, 0.81 ft. above, and Ontario, 1.23 ft. above. It was anticipated that during March, Superior, Michigan and Huron would fall 0.1 ft., Erie 0.2 ft., and Ontario 0.3 ft.

The Temiskaming Navigation Co. held its annual meeting in Haileybury, Mar. 12. The report showed a profit of about $5,000 for the year, as against a deficit of about $1,500 for the previous year. The following are the directors for the current year:—President, J. Lumsden, Ottawa; Vice President, A. Ferland, Haileybury; Secretary-Treasurer, pro tem, J. A. Larochelle, Haileybury; other directors, G. H. Rochester, Haileybury; S. McChesney, Liskeard, and J. I. McCracken, Ottawa. The Haileybury Navigation Co.'s annual meeting was held subsequently, and the same officers and directors were also elected.

The Algoma Central Steamship Line has acquired from the receivers of the Gilchrist Transportation Co., Cleveland, Ohio, the two freight steamships, Saturn and Uranus, both of which will be transferred to the Canadian register. They were built at Wyandotte, Mich., and Lorain, Ohio, respectively. Following are the chief dimensions, etc.:—Length, 346 ft.; breadth, 48 ft.; depth, 28 ft.; hatches, ten, each 8 ft., spaced 24 ft. centres; engines, triple expansion, with cylinders 22, 35 and 58 ins. diar., by 42 ins. stroke; boilers, two Scotch type, 13 ft. 2 ins. by 11½ ft., 170 lbs. working pressure; cargo capacity, 5,500 tons; tonnage, Saturn, 3,717 gross, 2,772 register; Uranus, 3,748 gross, 2,943 register.

The Canadian Towing and Wrecking Co. is having built at Port Arthur an ice breaking steam tug, to be named J. T. Horne, which will be ready for operation early in the summer. The dimensions will be:—Length over all, 125 ft.; length between perpendiculars, 114 ft.; moulded beam, 28 ft.; moulded depth, 16 ft. The frames are spaced very closely forward in that part of the shell which will come in contact with ice, and she is strongly plated throughout this part. The propelling machinery consists of triple expansion engines, with cylinders 18, 30 and 48 ins. diar., by 39 ins. stroke, supplied with steam by one Scotch boiler 15 ft. 4½ ins. diar. by 11½ ft. long, with three furnaces equipped for natural draught, with a working pressure of 185 lbs. In addition to the ordinary pumps, the vessel will be fitted with a large fire pump, with one turret nozzle forward and connections for hose lines on both sides of the cabin. She will also be equipped with electric light throughout and a large searchlight.

British Columbia and Pacific Coast Marine

The C.P.R. s.s. Princess Ena has been drawn out on the ways at Esquimalt for a general overhauling.

The C.P.R. s.s. Princess Royal, which has been laid up for overhauling during the winter, has been replaced in service.

Press reports from Port Mann state that work on the lengthening of the present dock, making it a mile long, will be resumed at an early date.

M. J. Wright, heretofore Contracting Freight Agent, Pacific Coast Steamship Co., Seattle, Wash., has been appointed General Agent of the company, at Vancouver, B.C.

The Dominion Public Works Department's dredge Mastodon is at work dredging the Parthia Shoal in Burrard Inlet. For navigation purposes, a stake light is being maintained until the completion of the work, on the north side of the channel south of the shoal.

The Fort George Lake and River Transportation Co., Ltd., has been incorporated under the British Columbia Companies Act, with $50,000 capital, and office at Fort George, to own and operate steam and other vessels and carry on a general navigation business.

It is reported that the C.P.R. has decided to lengthen its s.s. Princess Mary, but no details are available, and it is improbable that anything will be done in the matter until the return of J. W. Troup, Manager of the B. C. Coast Service, from Great Britain.

There is under construction at Port Arthur, a new and powerful ice breaker for the Great Lakes Dredging Co. The vessel will be of steel throughout, 120 ft. long, and will have approximately 700 h.p. more than the ice breaker James Whalen, which is at present the most powerful one on the Great Lakes.

C. Gardiner Johnson, who has been appointed agent for the Hamburg-American and Eastern Asiatic Steamship Co., at Vancouver and Victoria, was reported recenty to be negotiating for the acquirement of waterfront sites for the erection of office and warehouse buildings in Vancouver.

The Coquitlam Shipbuilding and Marine Railway Co. recently announced that towards the end of March, it would build its first steamboat on the Fraser River. The vessel, which will have capacity for about 2,000,000 ft. of lumber, will be 236 ft. long over all, 187 ft. keel, and 43 ft. beam, and oil will be used as fuel.

The White Pass and Yukon Route is reported to be building two steamboats at White Horse for the Alaska trade. The vessels will, it is said, be equipped with the machinery from the steamboats Tyrell and Victoria. The question as to whether these vessels will be placed on the Canadian or U. S. register is said to be undetermined, this depending on the U. S. decision as to whether Fairbanks is to be made an open port or not.

The Minister of Marine is considering the question of the appointment of assessors in cases of enquiry into marine accidents. The composition of recent courts, especially in British Columbia, has been the subject of considerable comment, culminating in the recent refusal of the master of the Union Steamship Co.'s Chelohsin, to give evidence in the enquiry into the stranding of that vessel in the Skeena River, on the ground that the assessors appointed were not competent to deal with the matter, being deep sea men, and not acquainted with coast navigation conditions. The courts in some later cases have been composed of men more in touch with local conditions, and it is presumed that any new rules which may be promulgated by the Department will follow on the lines indicated in these later appointments.

Terms for Installation of Wireless Telegraphy on Vessels.

When the bill "An Act respecting Radiotelegraphy" was before the House of Commons Committee on Marine and Fisheries recently, there was considerable discussion as to the cost of installing and maintaining wireless telegraph apparatus on vessels. J. H. Lauer, Manager of the Marconi Wireless Telegraph Co. of Canada, submitted a copy of the standard agreement, some of the principal provisions of which are as follows:—The company installs the apparatus at its own cost and pays the operator. The vessel owner provides cabin accommodation and board for the operator, also masts, spreaders, halyards, aerials, insulators, accumulators, electrical current, mains and controlling gear. Vessel owners are to pay on the following scale:—$1,000 a year for steamships in service during navigation season only; $1,250 a year for steamships in service the whole year. If more than one operator has to be provided, an additional $500 is payable for steamships in service during navigation season only and $600 for steamships in service during the whole year. Monies received by the company for transmission of messages are to be divided between the company and the vessel owner, after $250 ship's tax has been retained by the company. The company is to be entitled to a share of any salvage money which the ship may earn, according to the extent to which the wireless apparatus and operator may have contributed to the rendering of such service. The ship owner is to provide the operator with board, etc. Contracts are made for five years, with privilege of renewal.

The Western Elevator Co. has awarded a contract to the Burrell Construction Co., Chicago, Ill., for an annex to its grain house on the Kaministikwia River, at Fort William. The additional capacity will be for 1,100,000 bush., and it is understood that the work will be completed for the accommodation of the forthcoming season's crop.

Trade and Supply Notes.

The matter which appears under this heading is compiled, in most cases, from information supplied by the manufacturers of, or dealers in, the articles referred to, and in publishing the same we accept no responsibility. At the same time we wish our readers distinctly to understand that we are not paid for the publication of any of this matter, and that we will not consider any proposition to insert reading matter in our columns for pay or its equivalent. Advertising contracts will not be taken with any condition that accepting them will oblige us to publish reading notices. In other words, our reading columns are not for sale, either to advertisers or others.

LUMEN BEARING CO.—Kester Barr, who has been appointed Manager of this company at West Toronto, succeeding F. Ganderton, resigned, was heretofore with Manning, Maxwell and Moore, Inc., of New York.

AMERICAN LOCOMOTIVE CO.—Leigh Best, Vice President, in addition to his other duties, has been given full charge of the automobile department, which, so far as is practicable, is to be segregated from the company's locomotive department.

BUTTERFIELD & CO., manufacturers of stocks and dies, die and screw plates, tap dies, reamers, etc., Rock Island, Que. and Derby Line, Vt., have sold their business to the Union Twist Drill Co. of Athol Mass. The business will be continued under the same name, and there will be no change in the management or policy.

THE UNITED STATES GOVERNMENT has recently purchased from The Safety Car Heating and Lighting Co., 43 Pintsch beacons for use on the St. Marys River. These beacons will use high pressure Pintsch gas and 6 ft. high pressure Pintsch gas flasks. They will also use 300 mm. Pintsch mantle lanterns. The U.S. Government has also purchased from the same company 5 range lights for use on the Detroit River.

Transportation Conventions in 1913.

May.—Association of Railway Claim Agents, Baltimore, Md.

May 6-9.—Air Brake Association, St. Louis, Mo.

May 19-21.—Railway Storekeepers' Association, Chicago, Ill.

May 20.—Association of Railway Telegraph Superintendents, St. Louis, Mo.

May 21.—American Railway Association, New York.

May 21-24.—International Railway Fuel Association, Chicago, Ill.

May 26-29.—Master Boiler Makers' Association, Chicago, Ill.

May 28.—Association of American Railway Accounting Officers, Atlantic City, N.J.

June.—American Society for Testing Materials, Philadelphia, Pa.

June.—Association of Railway Electrical Engineers, Atlantic City, N.J.

June 11-13.—American Railway Master Mechanics' Association, Atlantic City, N.J.

June 16-18.—Master Car Builders' Association, Atlantic City, N.J.

June 17.—Train Despatchers' Association of America, Los Angeles, Cal.

June 17-19.—International Association of Railway Special Agents and Police, Salt Lake City, Utah.

June 17-20.—American Association of Freight Agents, Buffalo, N.Y.

June 18.—Freight Claim Association, Bluff Point, N.Y.

June 24-25.—Association of Transportation and Car Accounting Officers; Charlevoix, Mich.

July 22-25.—International Railway General Foremen's Association, Chicago, Ill.

Aug.—Travelling Engineers' Association, Chicago, Ill.

Aug. 12-15.—Railway Gardening Association, Nashville, Tenn.

Aug. 18.—International Railroad Master Blacksmiths' Association, Richmond, Va.

Sept. 8-12.—Roadmasters' and Maintenance of Way Association, Chicago, Ill.

Sept. 9-12.—Master Car and Locomotive Painters' Association of U.S. and Canada, Ottawa, Ont.

Oct. 14.—Railway Signal Association, Nashville, Tenn.

Oct. 21-23.—American Railway Bridge and Building Association, Montreal.

Transportation Associations, Clubs, Etc.

The names of persons given below are those of the secretaries.

Canadian Car Service Bureau, J. E. Duval, 401 St. Nicholas Building, Montreal.

Canadian Freight Association (Eastern Lines), G. C. Ransom, Canadian Express Building, Montreal.

Canadian Freight Association (Western Lines), W. E. Campbell, 502 Canada Building, Winnipeg.

Canadian Railway Club, J. Powell, St. Lambert, Que. Meetings at Montreal, 2nd Tuesday each month, 8.30 p.m., except June, July and August.

Canadian Society of Civil Engineers, C. H. McLeod, 413 Dorchester St. West, Montreal.

Canadian Street Railway Association, Acton Burrows, 70 Bond Street, Toronto.

Canadian Ticket Agents' Association, E. de la Hooke, London, Ont.

Central Railway and Engineering Club of Canada, C. L. Worth, 409 Union Station, Toronto. Meetings at Toronto 3rd Tuesday each month, except June, July and August.

Dominion Marine Association, Counsel, F. King, Kingston, Ont.

Eastern Canadian Passenger Association, G. H. Webster, 54 Beaver Hall Hill, Montreal.

Engineers' Club of Montreal, R. W. H. Smith, 9 Beaver Hall Square, Montreal.

Engineers' Club of Toronto, R. B. Wolsey, 94 King St. West, Toronto.

Great Lakes and St. Lawrence River Rate Committee, Jas. Morrison, Montreal.

International Water Lines Passenger Association, M. R. Nelson, New York.

Niagara Frontier Summer Rate Committee, Jas. Morrison, Montreal.

Nova Scotia Society of Engineers, A. R. McCleave, Halifax, N.S

Quebec Transportation Club, J. S. Blanchet, Quebec.

Ship Masters' Association of Canada, H. O. Jackson, 376 Huron street, Toronto.

Shipping Federation of Canada, T. Robb, 526 Board of Trade, Montreal.

Western Canada Railway Club, W. H. Rosevear, 25½ Princess St., Winnipeg. Meetings at Winnipeg 2nd Monday each month, except June, July and August.

High Speed Trains in Germany.—The 1912 summer time table of the German Railway Systems provides an interesting study, for it reveals that a new era of rapid transit has dawned in that country. In 1911 a non stop run from Berlin to Hamburg in 3 hours and 20 minutes was inaugurated, and in 1912 the run was further accelerated. The train left Berlin at 8.55 p.m., reaching Hamburg, 178¼ miles distant, at 12.09 a.m., the speed being 55.1 miles an hour. The return journey was made at 54.5 miles an hour. The train was a light one, consisting of four four-axle carriages and a six-axle dining car.

The Gas Electric Motor Car.—Railway officials have been watching with interest the development of the self-propelled car for use on steam roads. Under steam operation, short branch lines, carrying a limited traffic, are notoriously unprofitable. Single units running at sufficiently frequent intervals give a more satisfactory service than the once a day trains; and the managers have turned to the self propelled car as offering a solution of the problem. Today over 20 railways in the United States and one in Canada have self propelled units of the gas electric type running on regular local schedule. The consumption of gasoline, while varying with the local conditions, is found to be low, the economy being due to the electric transmission, which lends itself admirably to the particular requirements of local service.

Children Who Ride Free Not to Occupy Seats.—The Twin City Rapid Transit Company, Minneapolis, Minn., is enforcing the rule against children occupying seats while older persons stand. Heretofore an adult has been allowed to take three children of six years and under on cars without paying fare. The rule which is now being enforced is as follows: "Children under six years of age, when acompanied by parent or guardian, provided not more than three such children are in the care of one person, will be allowed to ride free. Should more than three children be in charge of one guardian, a full fare will be collected for each child in excess of that number. Should conductor see free riding children occupying seats while other passengers are standing, he will ask the parent or guardian either to take the child on his or her lap, have the child stand, or else pay full fare on account of each occupied seat."

TENDERS.

TENDERS addressed to the undersigned at Ottawa and endorsed on the envelope "Tender for Fisheries Patrol Steamer" will be received up to noon of the

TWENTY FIFTH DAY OF APRIL, 1913, for the construction of a steel wood sheathed twin screw patrol steamer to be delivered at Selkirk, Manitoba, of the following dimensions, viz.:—

Length B.P.	140 ft.
Breadth moulded	25 ft. 6 inch.
Breadth extreme	27 ft ¾ inch
Depth moulded	13 ft. 6 inch.
Indicated horse power	900.

Plans and specifications and tender forms can be seen at the Department of Marine and Fisheries, Ottawa, at the offices of the Collectors of Customs at Toronto, Collingwood, Midland and Kingston, Ont., at the offices of the Harbour Masters at Port Arthur and Fort William, and also at the offices of this Department at Montreal, Quebec, St. John, N.B., Halifax, N.S., and Victoria, B.C.

Plans and specifications and tender forms can be procured upon application from the Department of Marine and Fisheries, Ottawa, and from the Agent of this Department at Victoria, B.C.

Each tender must be accompanied by an accepted cheque on a chartered bank in favour of the Deputy Minister of Marine and Fisheries, equal to ten per cent. of the whole amount of the tender, which cheque will be forfeited if the successful tenderer declines to sign the contract prepared by the Department or fails to complete the steamer.

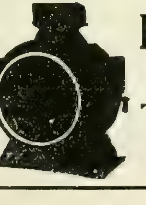
Cheques accompanying unsuccessful tenders will be returned.

The Department does not bind itself to accept the lowest or any tender.

Newspapers coyping this advertisement without authority from the Department will not be paid

ALEX. JOHNSTON,
Deputy Minister of Marine and Fisheries.

Department of Marine and Fisheries,
—38375. Ottawa, March 11th, 1913.



HEADLIGHTS - We Make Them

for OIL for Pyle ELECTRIC equipment or SPECIAL to Blue Print and carry a large stock of standard headlight reflectors, burners, burner parts, felt wicks and chimneys.

The HIRAM L. PIPER CO., Limited

75-77-79 and 81 St. Remi Street, Montreal.

Railway Catalogue No. 30, Marine Catalogue No. 21.
Mailed on Request.

Winnipeg Electric Railway Company

Annual Report for Fiscal Year ended December 31, 1912

Report of the President and Directors.

To the Shareholders:—

Your directors beg to submit a statement of the past year's business, showing gross earnings of $3,765,384.06, as compared with $3,829,749.67 last year.

After providing for the percentage on earnings accrued to the city and interest on bonds, your directors declared four quarterly dividends, amounting to $720,000, leaving a surplus of $474,463.12, which has been transferred to the credit of profit and loss account, making a total credit to this account to Dec. 31, 1912, of $2,091,236.37.

All the properties of the company have been efficiently maintained.

In accordance with the plan of extensions adopted at the last annual meeting, the following improvements and additions to the company's equipment and system have been made in the various departments.

TRACK AND ROAD BED.—9.235 miles of track was laid as follows: 6.92 miles with 80-lb. rails with concrete foundation and asphalt pavement; 2.157 miles with gravel ballast; 0.158 mile with creosote block pavement.

ROLLING STOCK.—33 large double truck closed motor cars with wide vestibules equipped with air brakes and all other modern appliances to insure the comfort and safety of passengers and trainmen, were constructed in the company's Winnipeg shops and put in service. Two new snow sweepers and one 5,000-gallon pneumatic street sprinkler were purchased and put in service.

ELECTRIC LIGHTING AND POWER Distribution System.—1,852 new poles were erected and 409,066 lbs. of wire with 114 transformers put up in extension of the company's light and power distribution system.

Transmission line 4½ miles long with necessary transformers to serve the plant of the Canada Cement Company and the new industrial town site in the Municipality of Assiniboia was constructed.

Three new motor generator sets were installed, one in the St. James sub station, one in the new sub station on Logan Avenue and one in the Assiniboine Avenue power house.

GAS DISTRIBUTION SYSTEM.—79,890 feet of new gas mains were laid, and 1,478 new gas services were installed in extension of the company's gas distribution system. In addition to the extensions to the exhauster house and the purifying house at the gas works, the necessary equipment to increase the capacity of this portion of the gas works by 2,000,000 cubic feet per day was installed.

CONSTRUCTED.—Gas Works—Extension to exhauster house, extension to purifying house.

Stores and offices at South Main Street car barns, of steel and brickwork with concrete foundations.

Sub station on Logan Avenue of steel and brick with concrete foundation.

Six track addition to North Main Street car barns to house 22 additional cars. Construction is of brick and steel with concrete foundation. The tracks are constructed with pits for convenience when repairing or adjusting cars.

Offices and employes' waiting room constructed at North car barns.

Twenty horse Stable on Kylemore Avenue, Ft. Rouge, two stories in height. Upper story used for hay loft and grain and for storage of wagons. Construction is of re-inforced concrete with brick veneer exterior.

Four story warehouse on Assiniboine Avenue in course of construction, of re-inforced concrete and brick veneer exterior.

Addition to the St. James sub station.

NEW OFFICE BUILDING.—Owing to the increase in the company's business, the directors thought it advisable for the company to secure its own office premises and therefore purchased a lot on the corner of Notre Dame Avenue and Albert Street, in the heart of the city of Winnipeg, and on June 13 commenced the construction of a fully modern 10 story fireproof office building. The company will use the basement and two first floors for its own offices, the balance will be rented, and on account of the great demand for office space it is estimated that the rentals received from the building will make itself sustaining. The company expect their portion of the building to be ready for occupation by April 1, and the portion to be rented by May 1, 1913.

WM. MACKENZIE, President.

Directors:

Sir Wm. Mackenzie, President: Sir Wm. Whyte, Vice President; F. Morton Morse, Secretary-Treasurer; Sir W. C. Van Horne, Sir D. D. Mann, D. B. Hanna, A. M. Nanton, Hugh Sutherland, R. J. Mackenzie; Manager, Wilford Phillips.

Auditors' Report.

To the President and Shareholders, Winnipeg Electric Railway Company.

Gentlemen:—

We beg to report that we have made a monthly audit of the accounts of your company and also of its subsidiary companies, viz.:—Winnipeg, Selkirk and Lake Winnipeg Railway, and the Suburban Rapid Transit Company, for year ending 31st Dec., 1912, and that our requirements as auditors have been complied with.

STATEMENTS.—The accompanying statements, viz.:—

WINNIPEG ELECTRIC RAILWAY Company.—Assets and Liabilities, Receipts and Expenditures, Profit and Loss, Capital Account.

WINNIPEG, SELKIRK AND LAKE Winnipeg Railway Company.—Assets and Liabilities, Receipts and Expenditures, Profit and Loss, Capital Account.

SUBURBAN RAPID TRANSIT COMpany.—Assets and Liabilities, Receipts and Expenditures, Profit and Loss, Capital Account have been examined by us, and we are of opinion that the said statements are properly drawn up so as to exhibit a true and correct state of the company's affairs according to the best of our information and as shown by the books of the company.

RECEIPTS.—The cash in the hands of the cashiers was counted on the afternoon of the 31st of December last and found to agree with the day's receipts as entered in the cash books. The working funds held by the cashiers were checked and duly accounted for.

The bank accounts of the three companies have been examined, and it has been found that all sums received were deposited daily and that the balances in the bank pass books, after deducting the outstanding cheques, agree with those shown in the cash books.

The supplementary cash books have been checked daily with the cashier's ticket. The incandescent power and gas bills have also been checked and only authorized discounts have been allowed.

The postings in the customers' ledgers have been verified, as also have the entries in the general cash book.

EXPENDITURE.—Vouchers duly approved by the General Manager have been produced for all disbursements of the companies and the entries in the ledgers agree with those in the books of original entry. Each month's pay rolls have been checked and it has been found that all amounts unpaid were deposited to the credit of unpaid wages account, with the exception of November and December, which have been deposited since the first of the year.

TICKETS.—On the 1st of January last the stock of tickets on hand was examined by us and found to agree with the stock as shown in the stock books.

CAPITAL STOCK.—The returns of the transfer agents were examined quarterly and the number of shares stated therein agreed with the amount of paid up capital.

DIVIDENDS.—The dividend sheets for the four quarterly dividends paid during the year have been audited and found correct.

All of which is respectfully submitted.

W. A. HENDERSON & CO.,
Chartered Accountants.

Winnipeg, Feb. 7, 1913.

STATISTICAL STATEMENT YEARS 1908-1912.

	1912	1911	1910	1909	1908
Gross Receipts	$3,765,384 06	$3,829,749 67	$3,284,341 83	$2,623,731 41	$2,206,094 88
Decrease 1912 over 1911—1.68%	64,365 61				
Operating Expenses .	2,004,147 92	1,900,967 67	1,654,833 60	1,320,665 09	1,088,872 50
Increase 1912 over 1911—5.43%	103,180 25				
Operating Expenses Per cent. of earnings	53 23	49 64	50 39	50 34	49 35
Net Earnings	1,761,236 14	1,928,782 00	1,629,508 23	1,303,066 32	1,117,222 38
Decrease 1912 over 1911—9.13% ...	167,545 86				
Net Income per cent. of Capital	16 75	18 51	15 58	14 39	13 14
1912, 7,131,047 average					
1911, 6,000,000					
1910, 6,000,000					
1909, 6,000,000					
1908, 5,669,541 average					
Passengers Carried ..	51,106,017	40,281,245	31,369,421	26,382,773	22,019,507
Increase 1912 over 1911	10,824,772				
Transfers	11,858,213	10,012,084	8,003,038	8,925,849	7,777,315
Railway Earnings per capita	13 58	10 46	10 02	10 03	9 80

Correct, F. MORTON MORSE, Secretary-Treasurer.

FINANCIAL STATEMENT FOR YEAR ENDING DEC. 31, 1912.

Assets.

Cost of Property:—	
Street Railway, Buildings, Plant and Equipment	
Electric Lighting, Plant and Equipment	
Electric Power, Plant and Equipment	
Gas, Buildings, Plant and Equipment	$18,217,689 23
Stores	241,602 54
Accounts Receivable	218,745 64
Cash on hand in office	13,807 26
Conductors' Working Fund...	10,642 85
Subsidiary Companies	638,270 16
	$19,343,757 68

(Continued on next page.)

Canadian Railway and Marine World.

May, 1913.

The Creosoting Process of Treating Railway Ties.

The preservation of organic substances against decay has been a subject of considerable prominence through all the ages, the ancients having acquired considerable dexterity in the practice of the art, as evidenced in the wonderful preservation of the Egyptian mummies and other early organic remains. Various materials were employed by the ancients in their preserving against decay, but the two principal ones used in the preservation of the mummies were a substance called natrum, supposed to be a mixture of several sodium salts, and different resins and bitumens. The bodies were supposed to have been immersed in vats containing the preservatives at high temperatures, as the compounds have penetrated to the innermost parts. That the fibres of the body were left as in the original state was demonstrated by an experiment of an English scientist, in which the preservatives from the heart of a mummy were completely withdrawn, when, after 3,000 years of perfect preservation, the heart at once began to putrefy. Some light on the lasting qualities of the preservatives is gathered from the discovery that the mummies preserved with solid resin and bitumen products are the best preserved. That the ancients had considerable knowledge of preservatives is beyond question, but the reasons for their beliefs seem to be obscure. They also held the opinion that those woods lasted the longest which were the most odoriferous, implying those that contained the most resin.

From those early days down to the present, there have been repeated endeavors to discover and embody new preservatives, but it is only within the last 200 years that the greatest activity has occurred. As early as 1756, there are reported attempts to impregnate timber with vegetable tars or extracts therefrom, but the first practical process embodying this principle was due to Jno. Bethell in 1838, and it is from this source that the creosoting process is frequently called the Bethell process. Of the many processes tried, the practical ones appear to have, early in the last century, narrowed down to four, embodying respectively corrosive sublimate (the Kyanizing process), sulphate of copper, chloride of zinc, and creosoting. Of these four, the first two have practically disappeared within the last half century, leaving the field clear to the last two, each receiving liberal support, and having its own particular group of supporters, although the general consensus of opinion is that each particular process has its own field of usefulness.

The Dominion Tar and Chemical Co., Ltd., in its plants at North Transcona, Man., and Sydney, N.S., is the only company in Canada employing the creosoting process for the treatment of ties, although there is another plant in this country, that while equipped for this process, is employing another process, which will be described in a later issue.

In Canadian Railway and Marine World for Aug. 1911, mention was made of a contract given by the C.P.R. to the Dominion Tar and Chemical Co. for the treatment of about 1,000,000 ties annually for a number of years. In addition to this, the creosoting company has a large contract to supply creosoted ties for the Canadian Northern Ry., this contract also to run over a number of years. In consequence, a plant of considerable size has developed at North Transcona, the company's main tie treating plant, the plant at Sydney being employed principally on creosoting blocks, and the general treatment of wood products.

The layout of the plant at North Transcona is shown in fig. 1, and the principal buildings, looking from the south, in fig. 2. The plant covers a tract of about 40 acres, but as the company owns a total area of about 110 acres, there is ample room for future expansion. The location is on the open prairie, 6 miles east of Winnipeg, the C.P.R.'s new main line bounding the property on the north, and the C.N.R. Dundee Branch on the south.

To the north and east of the buildings is a large area for the seasoning of the untreated ties, a section of this area being shown in fig. 3, the piles stretching north as far as the box cars shown in the distance. The ties, as they come to the plant, principally in box cars from points on the lines of the company whose ties are being treated, are first of all barked. This is performed at the door of the car as they are being drawn out to the pile, and consists simply in shaving the bark off with an adze, removing that part which is most liable to early decay. The ties thus barked are piled in the manner shown in fig. 3. Standard gauge tracks run the length of the grounds a few feet apart, between which are piled the ties. The cars are brought directly to the piling ground, where the ties are stripped and piled.

In the piles, the ties are not placed close together, but are so arranged as to give good circulation, to season rapidly. The time during which the ties must be allowed to remain for seasoning depends entirely on the kind of wood under treatment, and the condition in which it is received at the treating plant. No definite figures can be given for these periods, but as a rule jack pine is left for from 2 to 3 months, and spruce and tamarack for from 5 to 6 months. The time of year and drying conditions are other important factors.

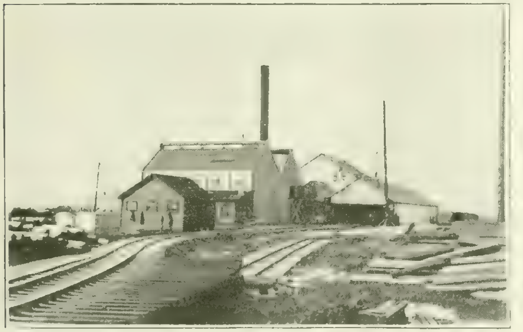


Fig. 2.—The Treating Plant from the South

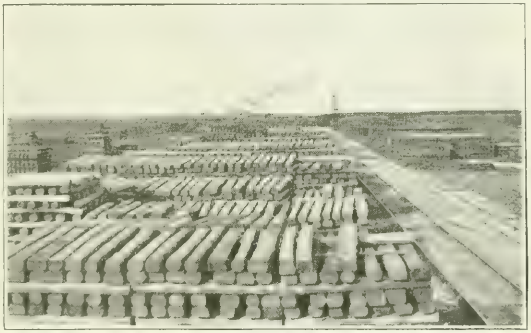


Fig. 3.—Untreated Tie Storage Yard.

Paralleling and close alongside of each of the standard gauge tracks is a narrow gauge service track, on to cars operating on which are piled the ties for treatment. Service cars loaded with ties, and awaiting treatment, are shown in fig. 4. The construction of these is unique, and is best illustrated in fig. 5, showing the cars coming out of the treating cylinder, following impregnation. The car is low set, and attached to the sides are retaining arms, which, with a band over top from side to side of the truck, forms a circle of a diameter slightly smaller than the diameter of the treating cylinder into which the cars are run. The cars are loaded at the seasoning piles, and the retaining bands secured over the top, two bands per car. The individual cars are hitched up into a train, as in fig. 4, the ends of the ties butting up against each other, to all practical purposes forming a single long log the length of the train.

The whole treating process is carried out in the cylinders. At North Transcona there are at present 3 treating cylinders, and a fourth on the way. Of these [illegible] 2 are 135 ft. long, and the third, [illegible] ft. The cylinder to come is similar to the first two. All are 6½ ft. diameter. They are simply long barrels constructed of boiler plate, and both ends are capped with dome doors, supported from a small swinging crane by which they can be swung out of the way, and when in service are secured to the ends of the cylinder by a series of clamps around the outer flange of the cylinder. A tight joint is necessitated. The construction is shown in fig. 5.

Along the bottom of the cylinder are four 4 in. pipes running the full length of the cylinder, supplying 135 lbs. of steam. Over top of these steam pipes are tracks for the small service cars, the loaded cars running on these rails just clearing the inside of the cylinder. The trains of tie cars are shunted into the cylinder. At this plant, for shunting purposes, are 2 small narrow gauge switching locomotives, in place of cable transfer systems in use in some other plants. From a railway standpoint, one of the switching locomotives is of peculiar interest. Constructed in England, it has all the characteristics of the [illegible] practice.

[illegible]

the cylinder of from 15 to 20 ins., and at the same time, steam is turned on in the heating coils under the track, and the temperature of the oil raised in the neighborhood of 200 degrees Fahr., which, in conjunction with the low vacuum in the cylinder, causes the water in the wood to vaporize and be drawn off to the vacuum pump. Early experiments determined that if the wood were subjected to a dry heat of sufficient intensity to drive off the water in it, the fibres would be injured to a certain degree, but that by applying the heat indirectly through the creosote medium and maintaining a vacuum at the same time, the water is drawn from the innermost fibres of the tie, and dispelled as vapor.

After being subjected to a vacuum for over an hour, it is discontinued and more oil allowed into the cylinder, this time under pressure. This pressure is made to gradually rise, taking upwards of 2 hours to reach a pressure of from 100 to 180 lbs., depending on the nature and condition of the wood. In one of the 135 ft. cylinders about 2000 gals. [illegible] introduced by gravity are forced into the cylinder, this amount entering directly into the fibres of the wood. [illegible] tie, but the average runs considerably above this, as much as 4 gals. entering ties [illegible]

[illegible] carefully watched, as the quality of treatment [illegible] If there is a "blow back," that is to say, if there is a rush of oil out of the cylinder on the pressure being removed, it is an indication of the fact that there must be air in the pores of the wood, not permitting the oil to enter freely, necessitating another application of the pressure. If there is no blow back of any consequence, other than that due to the compression of the wood in the cylinder, the ties have been treated sufficiently. The oil is then discharged from the cylinder into the working tank by compressed air, draining out through the bottom of the cylinder. The treated ties are allowed to stand in the cylinder for some time after the completion of the treatment, in order that the surplus creosote oil may drain off.

The power house adjoins the building containing the working tanks, and like the other buildings of the plant, is of corrugated iron. In it are two 9 x 14.9 x 13.7 in. vacuum pumps, four 8 x 4 x 10 in. oil pumps, and two compressors, respectively 8 x 8 x 12 in. and 10 x 10 x 14 in., all steam driven. On the wall of the power house are recording and indicating gauges in appropriate panels. In the rear of the power house is the boiler room, containing two water tube boilers, with a total capacity of 1000 h.p. The feed water, obtained from wells in the grounds, is treated in a softening plant before entering the boiler, and is heated by a feed water heater. Electrical power is generated in a small building adjoining the main power house, [illegible] plies the sundry lights about the buildings, and 16 arc lights placed high on poles at various points in the grounds, as shown in figs. 4 and 6. These are made necessary by the nature of the work, which is continuous day and night.

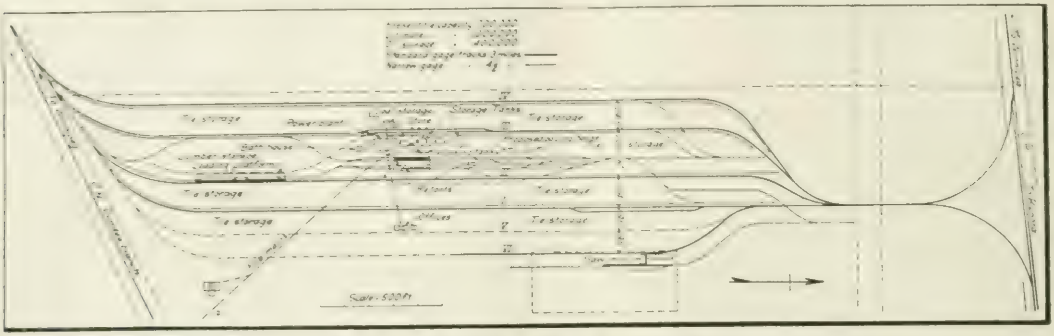


Fig. 1.—Layout of Buildings and Yard of Creosoting Plant.

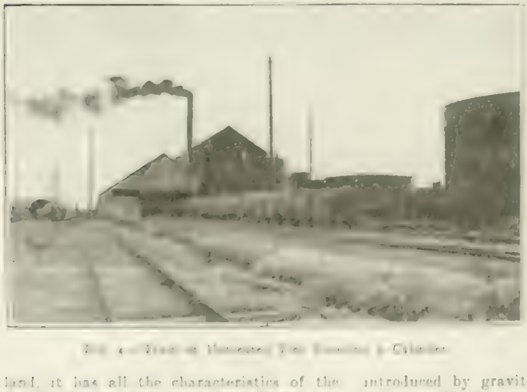


Fig. 4.—Train of Untreated Ties Entering a Cylinder.

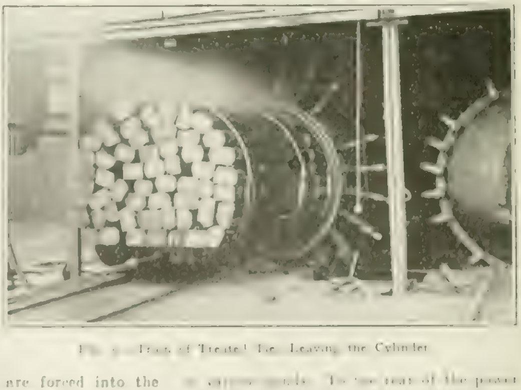


Fig. 3.—Train of Treated Ties Leaving the Cylinder.

The ties, on completing the period of draining following the treatment, are drawn out of the cylinder, as in fig. 5, by one of the narrow gauge locomotives, and drawn up the track in the foreground of fig. 2, on to the platform shown in fig. 7, which is at the level of the flooring of the cars on the standard gauge track alongside from a small 50 h.p. generator. This supthe platform. The ties are loaded directly on the awaiting cars when these are available; otherwise they are stored in promiscuous heaps at the far end of this loading platform, as may be noted on the right in the distance. Flat cars and coal cars are the only ones that can be employed for this purpose, as if box cars are used, the creosote oil left in the cars on the removal of the ties renders them unfit for grain service for months.

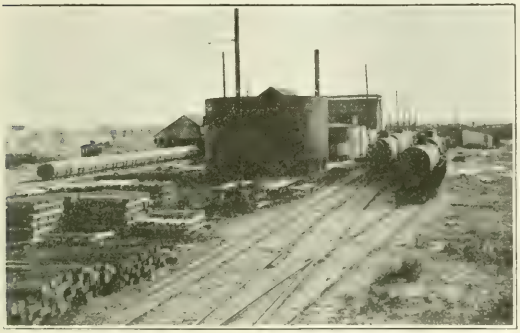


Fig. 6.—Creosote Oil Tank; Cylinders on Left.

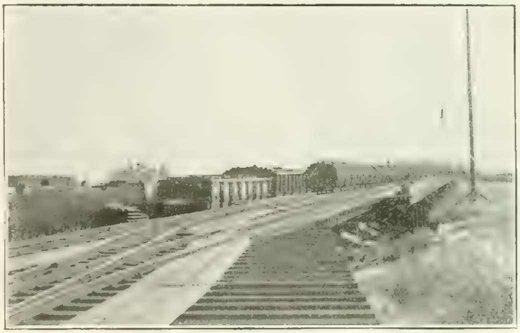


Fig. 7.—Treated Tie Unloading Platform

The creosote oil, as received in tank cars from the company's two plants, is drained from the tank cars on the tracks to the right in fig. 6, into an underground chamber, from which it is pumped up into the large tanks in the centre of the illustration. The combined capacity of these tanks is about 500,000 gallons.

The company's offices are due east of the treating cylinders. The isolated nature of the plant made necessary the erection of buildings to accommodate the employes, of whom there are over 300. These are housed in bunk houses to the east of the plant.

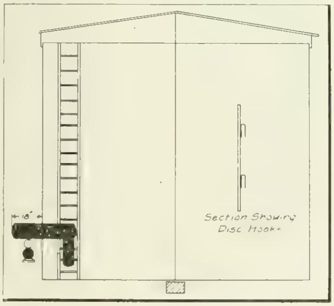
The company's head office is in Montreal, E. Bernard Smith being General Manager. G. G. Roberts is the Local Manager at North Transcona.

Second Track Work on the Canadian Pacific Railway in the Mountains.

The work of double tracking the C.P.R. between Calgary and Vancouver is in progress on the western end of the line, and construction will be begun at several points in the mountains early in the spring. Better gradients are to be secured at the same time that second trackage is provided, and for this reason it is necessary to abandon the present route entirely in some places. Changes in the route across the Selkirk Mountain range will shorten the line about 3 miles, and will involve the construction of a tunnel 5 miles long to eliminate the present summit crossing through Rogers Pass.

For the major portion of the mileage between Calgary and Vancouver the proposed changes will give a maximum gradient not exceeding four-tenths of 1%, the exceptions being on the grades to the summits in the Selkirk and Rocky Mountain crossings. The spiral tunnels in the Rockies between Hector and Field, B.C., which have a maximum grade of 2.2%, will still be used, other spiral tunnels being driven to provide for the second track. The present spiral tunnels were described and illustrated in Canadian Railway and Marine World for Jan., 1911.

In the Selkirk Mountains a route with better grades than those now in use has been located by the recent surveys. Westward from Six Mile Creek the present route, which ascends the side hills of Beaver River Valley and follows its tributary, Bear Creek, to the summit in Rogers Pass, will be abandoned altogether to secure a maximum grade not exceeding 1%. The new line follows the bottom of the Beaver River Valley to the eastern portal of the proposed tunnel, which will do away with the grade up to Rogers Pass and incidentally eliminate 4 miles of snowsheds. The western portal of the tunnel will be a few miles below Glacier in the valley of the Illecillewaet. It is expected that the grade through the tunnel will not be much in excess of 1%. In addition to the grades exceeding four-tenths of 1% which have already been mentioned, there will be one other exception to this as a maximum gradient, which will be in that part of the line between the western portal of the tunnel and Revelstoke. Here the line often skirts the brink of the Illecillewaet Canyon, and great difficulties would attend grade alterations at many points. Fuller particulars of this portion of the work were given in last month's issue.



Proposed Car Repair Protection Disc.

The cost of the proposed route changes, second tracking and driving the tunnel, is estimated at about $150,000,000, and at least 4 years will be required to complete the work. F. F. Busteed, M. Can. Soc. C.E., is in immediate charge of the work, with office at Kamloops, B.C.

Protection for Car Repairers.

As a result of a general discussion of this question at the Board of Railway Commissioners sitting in Ottawa, Dec. 12, 1912, the Board has issued the following circular to railway companies:—"The present practice of using a flag for protection purposes is considered very unsatisfactory, and a simple device, as set forth in the accompanying diagram, has been suggested for use. This could be of light steel or wood, made so as to fold up, and when opened up could hang on the ladder rungs by hooks, as shown in the sectional view. The disc could project 18 ins. beyond the car and be 10 ins. in depth, with a hook on the bottom side for hanging a lantern for night use. This disc would not be as subject to the caprices of the wind as a flag, and would be readily discernible for the full length of any ordinary train. Furthermore, as it can be so easily applied, there will be no excuse for failure of employes to neglect its use. The arm of the disc should be painted blue, and a blue light used at night as required by the standard rules. The Board will be glad if railway companies will give this suggestion careful consideration and let the Board have their views thereon as early as possible."

Taxation of Steam Railways in Ontario.

The Ontario Government collected $448,515.66 as taxes from the various steam railways operating in Ontario during the financial year ended Oct. 31, 1912. This amount was made up as follows:—Algoma Eastern Ry., $233.76; Algoma Central and Hudson Bay Ry., $1,724.51; Bay of Quinte Ry., $1,405.12; Brockville, Westport and North Western Ry., $675; Canada Atlantic Ry., $20,635.74; C.P.R., $157,166.28; Canadian Northern Ry., $14,316; Canada Southern Ry., $32,669; Central Ontario Ry., $1,984.50; G.T.R., $181,482; G. T. Pacific Ry., $8,236.80; Irondale, Bancroft and Ottawa Ry., $765; Kingston and Pembroke Ry., $1,551; Lake Erie and Detroit River Ry., $3,348.20; Niagara, St. Catharines and Toronto Ry., $553.80; Nosbonsing and Nipissing Ry., $55; Ottawa and New York Ry., $853.50; Thousand Islands Ry., $55; Toronto, Hamilton and Buffalo Ry., $1,223.05; James Bay Ry., $9,486.40; Marmora Ry. and Mining Co., $96.

The removal of 78.8 cu. ins. of metal weighing 22 lbs. from a 1 in. square test bar, is the reported performance of a 14 in. high speed file, tested on both sides at a Sheffield, Eng., plant. The file made 120,000 strokes in 39 hours.

Railway Mechanical Methods and Devices.

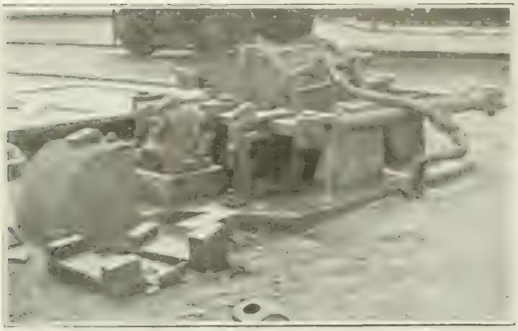
Coupler Stripping Press at Michigan Central Shops.

[illegible]

[illegible]

[illegible]

[illegible] the rivet. One of the big advantages claimed for this method by Mr. Marple is [illegible] This method is a considerable improvement [illegible]



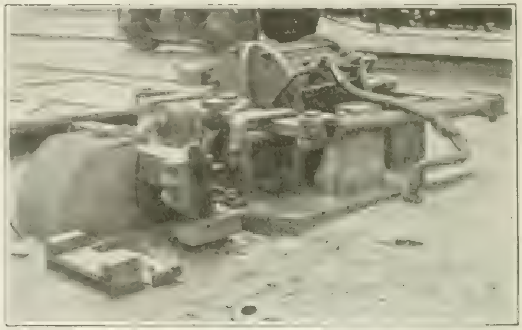


Fig. 1.—Air Operated Coupler Stripping Press. Fig. 2.—Coupler Stripping Press in Operation.

Spring Leaf Roller at Canadian Northern Railway Shops.

[illegible] fulcrumed foot lever, by means of which the upper roller is brought down on the pair of spring leaves, there is a short lever just the length of the machine base. This is fulcrumed, as usual, at the right end, with a link near its middle connecting with the bearings on each side, which are movable in vertical ways in the frame of the [illegible].

[illegible] there is mounted a small air cylinder, the piston rod of which is attached to this fulcrumed lever. On turning the air valve, attached to the frame of the machine, the plunger is depressed, pulling down the upper rollers, and holding them down tightly on the spring leaves while the latter are being rolled, leaving both the blacksmith and helper freer to perform the necessary forming operations.

It is the intention to still further improve the roller by having the rolls operated by power. This is to be accomplished by having a long air cylinder attached to the side of the frame directly below the present location of the handle. To the upper end of the cylinder plunger rod will [illegible] on the handle end of the upper roller, the movement of the plunger thereby turning [illegible] free of mechanical work. The cylinder will be double acting, to turn the rolls in both [illegible]

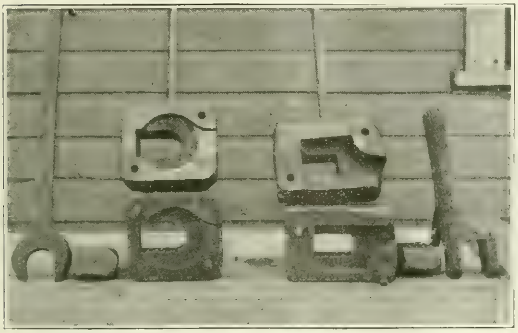
[illegible]

G.T.R. Ordered to renew Rails. — The Board of Railway Commissioners has passed a rather unusual order, requiring the G.T.R. to renew the rails on its Barrie Division [illegible] the completion of the work trains between [illegible]

[illegible] duced in the construction of the 90 mile water supply tunnel for New York. On the [illegible] a narrow strip of concrete flooring as the tunnel progresses, the inner surface of which is curved to form the lower portion [illegible] mould on the car is pushed forward between settings. The car also carries on its top, a pair of tracks over which the work cars operate, en route to the tunnel shaft.

Steam Hammer Forgings at Grand Trunk Pacific Railway Shops.

The lack of a forging machine at the G.T.P.R. old shops at Rivers, Man., made necessary the development of alternative methods of producing work that would ordinarily be done in the forging machine. For most of the work, the steam hammer has been found to be useful, and by various means the work is now being produced through its use. Some small shops are still called upon to do the work in the same way, but such shops are becoming fewer every year.



Steam Hammer Forgings and Dies at G.T.P.R. Rivers Shops.

In the accompanying illustration are shown completed a spanner and the forked end of an eccentric rod, with the dies and tools used in their production. In both instances, bar stock is drawn down under the steam hammer to roughly the required shape, and formed to final outside shape in the dies shown, the upper die being guided down over the lower one on the two guiding pins. On the outside shape of the pieces being formed in the dies, that is, when the two parts are brought down flush, the flash forming in the upper and lower holes, shearing pins, shown alongside the dies, the shape of these holes are placed therein, and driven through under the steam hammer, forming the openings in the ends as in the spanner and rod ends.

A smooth and perfect job results, equal in quality with the forging machine work, but of course, at a much slower rate of production.

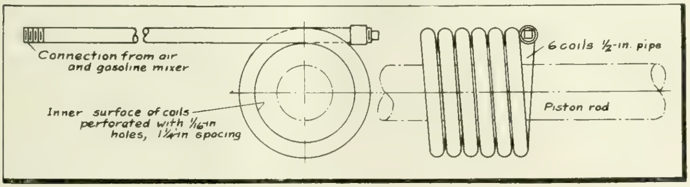
The company's repair shops are now located in the new buildings at Transcona, Man., and in consequence, the foregoing method of production has been superseded by more modern means.

In its final report to the U.S. Interstate Commerce Commission, the Block Signal and Train Control Board made the recommendation that all interstate railways should be compelled to adopt the block signal system. The Board also recommended that tracks be inclosed and laws against trespassing be enforced.

Heater for Bending Piston Rods at Grand Trunk Railway Stratford Shops.

At the G.T.R. locomotive shops at Stratford, Ont., piston rods that after forging are found to be eccentric to a degree that would be inadvisable to attempt to bend cold, are straightened without removal from the lathe. Usually it is necessary to remove the rod to a forge fire, heat and bend back to shape, and then return to the lathe. Straightening them in the lathe, when set up for machining, effects a considerable saving in time, from the fact that it is there that the rods are found to be out of true, so that the error is remedied without removal from that spot.

The heater employed for the purpose is shown in the accompanying illustration. It consists of six turns of ½ in. wrought iron pipe, coiled, to give an internal diameter of 4½ ins. One end of the pipe is made blind with a pipe plug, and the other end has a tangential section about 3 ft. long, to which a connection is made to a portable air and gasoline mixing tank that is commonly to be found around locomotive shops. Radially inward from the inner surface of the coiled pipe, there is a series of 1-16 in. holes at a 1¼ in. spacing, through which the inflammable vapor impinges on the rod, burning with an intense heat, all the small jets of flame being directed towards the centre.


Connection from air and gasoline mixer
Inner surface of coils perforated with 1/16-in holes, 1¼-in spacing
6 coils ½-in. pipe
Piston rod

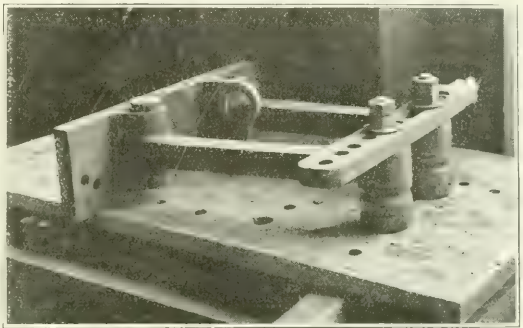
Heater for Use in Bending Piston Rods Without Removal from the Lathe.

The burner, connected by a rubber hose to the supply tank, is slipped over the end of the piston rod in the lathe, and located over the point to be bent. The heat is so intense that a very short time suffices to heat the rod to a bending heat, when it is a simple matter to rectify the error without removing the rod from the centres, or straining the lathe, as might happen if an attempt was made to bend cold between centres.

By means of exhaust fans for the drawing off of fine dust from grinding rooms, the polishing of metals has now become a much more healthful and agreeable business than formerly.

Bulldozer Forming Die at Canadian Pacific Railway Winnipeg Shops.

A handy form of die for attachment to the movable bulldozer head is in use at the C.P.R. shops at Winnipeg. There is a wide range of bending operations performed on the bulldozer in which the whole operation consists simply in bending the two projecting ends of a bar around a stationary block or pin, such, for example, as the various sizes of coupler yokes, eye bolts, and other similar parts. The conventional practice is to make a male and female die for each such part.



Adjustable Bulldozer Forming Die.

With the die as made in these shops, the one female die may be used with a large number of male dies, reducing the stock of dies required, this being accomplished in a very simple manner, as the accompanying illustration indicates. Instead of the two arms of the female die being solid, with the usual rollers on the outer ends, the two arms are still retained, but are attached to the base of the die by a pin connection in such a manner as to be free to swing on that pin connection. The outer ends of these pinned arms are held in a fixed relation to each other by a cross member, consisting of a piece of flat stock, drilled with spaced holes, and a bolt slot. By bolts in the ends of the arms above the rollers, the rollers are set in any fixed relation to each other, for forming any size of stock around a given mandrel. The nearer roller cannot slip in the holes, but in the slot, the far bolt might be liable to do so if the friction of the bolt and nut were alone depended on. In consequence, there is a set screw in the other end of the cross piece, locating the roller on that side without danger from slippage.

The whole adjustable die is attached to the face of the bulldozer ram. While it would be possible to operate on heavy stock with such a die, it is used for the most part only on lighter stock.

The problem of keeping superheater tubes clean has been solved on one U.S. road, where the flue cleaners are supplied with pocket flash lamps which enable them to see the whole length of the tube, and thus determine whether they are doing effective work.

In order that the mining and transportation of ore might progress even in the coldest weather, the railway ore cars of an Alaska mining company are provided with false bottoms, containing heating pipes, through which steam is passed from boilers at the bunkers. This thaws the ore, and it is said no difficulty has been experienced in handling the ore even at 50 degrees below.

American Railway Engineering Association's Committees' Reports.

The various standing and special committees of the American Railway Engineering Association have been continuing their investigations during the past year along the lines assigned to them. Following is a summary of their investigations and recommendations.

COMMITTEE ON ROADWAY.

One of the subjects assigned to this committee was the presenting of formulae of general use for determining waterway areas under varying conditions, including the consideration of hydraulic features. In the matter of waterway areas it reports some progress, but considers that at this early date enough data cannot be had to derive a simple formula. Considerable information has been gathered dealing with hydraulic features of culverts, but owing to the incompleteness of certain data it is deemed advisable to defer the report until a later date.

On the subject of the allowable unit pressures on roadbeds of different materials, which was to be investigated jointly with the committee on ballast, the committee has been unable to get any new information. Pointing to the present high percentage of rail failures and the probable advent of 100 ton cars and increasing locomotive axle loads, as well as to the time and expense that would be required to make comprehensive tests under service conditions, the committee directs attention to a resolution previously submitted, that an appropriation be made and a special committee be appointed to make such tests.

A large amount of information has been collected on the ventilation of subway tunnels in connection with the study of tunnel construction and ventilation. It is pointed out, however, that the ventilation of railway tunnels used by coal burning locomotives is an entirely different subject from that of city subways and conclusions are withheld until experiments now being conducted on single and double track steam railway tunnel ventilation are completed.

It has agreed with the committees on track, and signals and interlocking on a subdivision of the study of economics in roadway labor, and reports progress along this line. It recommends that the last three subjects for investigation be reassigned.

COMMITTEE ON BALLAST.

As mentioned in the work of the committee on roadway, these two committees were instructed to investigate the unit pressures on roadbed, the ballast committee to report on the proper depth of ballast of various kinds to insure uniform distribution of the loads. The committee has made tests under artificial conditions as near like regular traffic conditions as possible, but believes that such tests, to be of value, should be made in track under regular heavy traffic. To this end it outlines and recommends a plan for a test to be made on a stretch of track on clay roadbed under heavy traffic, providing successive short lengths of ballast of various kinds and thicknesses, accurate records of maintenance costs being kept, and photographs being taken at regular intervals to show deformation of the roadbed.

Another assignment of this committee was a continuation of the study of physical tests of stone for ballast. No further information is offered on this subject, but certain additions for clearness are recommended in the wording of the Manual on these tests. A record is also presented of a test made by the Pennsylvania Rd. in regard to the first cost and that for maintaining various sizes of stone ballast.

The other subject under investigation was that of gravel ballast and methods of grading different qualities. Extensive tests have been made by H. B. MacFarland, Engineer of Tests of the Atchison, Topeka and Santa Fe Ry., on samples of gravel ballast from nineteen pits in various parts of the country. His report gives a photographic cut of each sample, a brief description of tests, and a table of the weights of the samples and the percentages of moisture, gravel, sand and dust. The committee presents for adoption a description of the method used in testing grading gravel.

The report includes a description by W. I. Trench, Division Engineer, Baltimore and Ohio Rd., of a method of employing specially designed screens instead of ballast forks for cleaning stone ballast. It was found possible by the use of this method to clean ballast for double track at a cost of $640 a mile, as compared with $1,466 a mile with the fork method. The committee recommends that the various methods and the corresponding costs for cleaning stone ballast be investigated during 1913.

COMMITTEE ON TIES.

This committee was asked to report on the effect of the design of tieplates and track spikes on the durability of ties; to continue the study of the stresses to which crossties are subjected, and determine their proper size; to report on the economy in labor and material effected through the use of treated ties as compared with untreated ones; and to continue the compilation of information as to the use of metal, composite and concrete ties.

In connection with the first matter, information obtained from 61 railways showed that 27 use tieplates with longitudinal flanges, 15 use plates with transverse flanges, 20 use corrugated plates, 11 use pronged ones, and 13 use flat ones—many of the roads using two or more types. Few of the roads use screw spikes, although several are experimenting with them. The committee was unable to obtain definite information as to the relative effect of the different designs of tieplates and spikes on the life of ties, but it believes that experiments now being conducted will throw some light on the subject in the near future.

After two years of exhaustive study of the stresses in ties, the committee is of the opinion that its findings submitted at the 1912 convention are correct. It believes experiments to determine the size of crossties are impracticable on account of the wide variation in the character of track and roadbed standards and maintenance and in the loads to which the ties are submitted.

During the year members of the committee inspected Simplex steel ties, Bates concrete ties, Carnegie steel ties and Universal steel ties on several railways. Information was also received from a number of other steam and electric railways concerning substitutes for wooden ties in service on their lines. It submitted the data received without recommendation as to the value of the substitute ties.

It also reports progress on the subject of economy in labor and material effected through the use of treated ties as compared with untreated ones.

COMMITTEE ON RAIL.

This committee was directed to consider revision of the Manual of the association, to present recommendations on standard rail sections, to continue the investigation of rail failures and present conclusions drawn therefrom, and to make concise recommendations for next year's work. The committee recommends a number of changes in the wording of the Manual to clarify certain points capable at present of more than one interpretation.

No recommendation is made as to standard rail sections, the committee believing that the sections already under observation have not been so long enough to permit the reaching of definite conclusions. A sub committee is considering modified sections, and will continue to do so as it learns of weak spots in the present sections. It proposes also to study rail joints and work toward a means of determining the stresses in rail and track under service conditions. In this connection an appendix by P. H. Dudley, Consulting Engineer on rails, tires and structural steel for the New York Central Lines, on stremmatograph tests of track under service conditions is presented.

Statistics of rail failures for the year ended Oct. 31, 1911, covering more than 12,000,000 tons of rail, are presented in a report by R. Trimble, Chief Engineer Maintenance of Way, Northwest System, Pennsylvania Lines. His chief conclusions from a study of the statistics are that they give a fair test of the performances of the different mills, showing lack of uniformity in the products of the different mills, or even the individual mills; that wide variations in the specified chemistry for the rails exist, to guard against which it may be necessary to take chemical tests from the finished products as well as from the ingots; that the heavier sections do not show as good average performances as the lighter; that open hearth rail as a whole shows a lower rate of failure than the bessemer, but an increase for the year as against a decrease for the bessemer, suggesting that the open hearth will approach the bessemer figures with increase of age, and that the tops of ingots are inferior to the bottoms, showing an insufficient discard from the top. The committee in calling attention to these conclusions emphasizes the wide range in tonnage and physical characteristics for the different roads, making comparisons between them difficult.

In the line of special investigations it presents various reports from its Engineer of Tests, M. H. Wickhorst, and others from other investigators. One of Mr. Wickhorst's reports gives results of abrasion tests of rails on a revolving machine, consisting of a circular track 20 ft. in diameter, on which revolved a heavy beam which could be given additional load by means of springs. In the tests, which were few and not entirely satisfactory, open hearth steel of 0.74% carbon abraded more slowly than bessemer steel of 0.50 to 0.54% carbon.

Other reports treat of the influence of titanium on bessemer ingots and rails and that of silicon on open hearth ingots and rails. The use of from 0.1 to 0.6% of metallic titanium in tests prevented the honeycombing of the bessemer ingot, but produced a larger and deeper pipe. The heavy segregation in the upper part was largely restrained, but that in the lower part was little affected. The brittle zone in the upper part was avoided, but large internal flaws were found lower down than with plain steel. Tests with up to 0.5% of silicon in open hearth steel showed similar results as to honeycombing, pipes, and segregation. The strength seemed to be increased somewhat, but the ductility remained about the same.

Another report deals with two ingots made by a special process, acid open hearth steel being treated with titanium.

The ingots were cupped down at the top, but contained no interior pipe. Another report describes a method for determining the transverse ductility of the bottom of the rail base and the load required to break the flanges of a rail supported near the flange edges. All of these reports were made by Mr. Wickhorst.

A description by Dr. Dudley of the ductility and elongation tests of the New York Central Lines, is given. The influence of seams or laminations in base of rail on rail failures is treated in a report by H. B. McFarland, Engineer of Tests of the Santa Fe System. J. R. Onderdonk, Engineer of Tests of the Baltimore and Ohio Rd., contributes a paper on the effect on the finished rail of piping, cavities and porous spots in ingots. C. D. Young, Engineer of Tests, and F. N. Pease, Chemist, of the Pennsylvania Rd., make a joint report on transverse or internal fissures in rail heads. Other reports are made on the Hadfield method of making sound ingots and on rail tests from a foreign viewpoint.

The committee recommends that investigations for the coming year be aimed at various methods in the making of both ingots and rails, at their composition, and at several special topics.

COMMITTEE ON TRACK.

The work of this committee was directed along three lines. The first was to present general specifications for track bolts, nutblocks, tieplates, and common and screw track spikes. The chief recommendations as to tieplates are that they shall be 6 in. or more in width, long enough to provide safe bearing area on the tie, and not less than ⅝ in. in thickness along either edge of rail base; each plate must have a shoulder at least ½ in. high, so placed as to give a greater projection of the plate outside than inside of the rail base, must be shaped to support screw spikes if such spikes are to be used, and must have punching to correspond to the slotting in the splice bars.

Bolts should be as large as possible. Anti-creepers should be designed to fit two or more different weights of rail, must be easily placed and removed under full ballasted track, should have as few movable parts as possible, the controlling parts to be non-rustable, should have sufficient takeup to allow proper tightening, and must not loosen when in place. It also gives specifications for the various track appurtenances above mentioned.

For the second topic, the design of main line turnouts, the committee presents typical plans for nos. 8, 11 and 16 main line turnouts, is preparing similar ones for crossovers, and is securing data as to the height of centre of gravity of new locomotives and tenders and allowable speeds through turnouts and various curves with varying superelevation of outer rail.

The third topic is economics in track labor. The committee has adopted an outline for future study to extend over a period of several years. The work of the past year was directed toward means of securing a better class of section foremen, and the committee concludes that the principle of apprenticeship should be applied to promising track laborers for a definite period, after which those considered suitable should be made assistant foremen with increased pay, and eligible to become foremen; that there should be periodical meetings for instruction and discussion and that where possible educational articles on the best practices should be sent to foremen and assistant foremen, after which they should be examined to determine their suitability for promotion.

The committee also presents a supplement for the table of junctions of the ten-chord spiral on pages 102-110 of the Manual.

COMMITTEE ON BUILDINGS.

On two of the subjects assigned to this committee—the design of inbound and outbound freight houses and methods of heating and lighting and sanitary provisions for medium sized stations—the committee makes no report other than that progress is being made.

A complete report is made on roof coverings, combining the last two previous reports, with some corrections and additions. Numerous classes of material and their applications are discussed, and conclusions are drawn that metallic roofings and those using Portland cement are valuable if properly used and protected, and that iron and steel for roofs should be of the best quality. It is therefore recommended that the previous finding in the Manual, that steel or impure iron materials should be avoided, no matter how protected, should be changed to cover these conclusions.

The other topic for investigation was the advantages and disadvantages of various types of freight house floor construction. The report on this subject states that freight house floors should be built to carry a uniformly distributed load of at least 250 lb. per sq. ft., that they should be of materials which will not in any way damage any articles placed upon them, that they should present a smooth and durable surface, and that they should be easily repaired. The merits of various types of construction are stated somewhat briefly, but no specific rules or recommendations are set forth.

WOODEN BRIDGES AND TRESTLES.

This committee presents a series of tables, standard drawings and other data on the practices and experiences of 61 railways relating to guard rails and rerailing devices for bridges, their effectiveness, and the manner of securing them to bridge floors; also reports are printed from 19 railways concerning fire protection for wooden bridges and trestles. On the latter subject it makes no recommendations.

On the subject of guard rails, it is recommended that guard timbers be used on all open floor bridges, that metal guard rails extend not less than 50 ft. beyond the ends of bridges, that guard timbers and rails be so spaced that derailed trucks will strike the latter without striking the former, and that the height of the guard rail be not more than 1 in. less than that of the running rail.

On the other topic assigned to the committee—formulae for determining the strength of sheet piling—it reports progress and recommends that in the coming year the report on this matter be completed; it also recommends that docks and wharves be studied.

COMMITTEE ON MASONRY.

This committee has been continuing its study of waterproofing of masonry and bridge floors, and has been investigating the effect on concrete structures of the rusting of the reinforcement, and also as to the principles of design of plain and reinforced-concrete retaining walls, abutments and trestles. No recommendations are made, but in the matter of disintegration of concrete and corrosion of reinforcing metal a report is presented, pointing out the effect of sea water on concrete, as described in a number of recent papers and publications, to which reference is made; that of water containing acids or alkalies; the behavior of cinder concrete under various conditions and the effect of electric currents. It indorses the conclusion of 1908 that steel embedded in good concrete will not corrode, whether above or below fresh or sea water level, but that it will in the presence of moisture if the concrete is porous.

SIGNS, FENCES AND CROSSINGS.

One of the subjects assigned to this committee was a study of the relative advantages of different kinds of fence posts. The committee presents data from 44 railways on the kind of wooden posts they use, and their cost and length of life. It also presents data from manufacturers of steel and concrete fence posts, and from railways experimenting with them. The data include descriptions, dimensional drawings, cost figures, and service records.

The committee concludes that concrete posts are practical and economical; that they should taper upward, being not less than 5½ in. at the base and 4 in. at the top; that the reinforcement should be about ½ in. from the surface; that the proportions should be one part of cement to four parts of run of pit gravel, or one part of cement, two parts of sand and four parts of crushed rock or screened gravel not smaller than ¼ in. nor larger than ½ in.; that great care should be taken to give the posts a smooth finish, molds with a vibratory motion when the concrete is being introduced being desirable; and that the posts should be cured for at least 90 days before being set or shipped. It also recommends that a series of tests be made to determine the comparative strengths of different types of posts.

Another line of investigation followed by the committee was that of track construction and flangeways in paved streets. It recommends that 141 lb., 9 in. girder rails or similar sections should be laid on treated ties, with tieplates and screw spikes, the ties to be laid on a bed of ballast 8 to 12 in. thick; that the roadbed should be drained with a 6 in. or larger vitrified tile drain with open joints on each side of the track, outside of the ties; and that the ballast should be carried up to the bottom of a 2 in. sand cushion for the pavement, which should preferably be of stone blocks.

It also endeavored to get data as to means of securing a suitable fence wire to resist corrosion and be durable, but obtained little useful information, and recommends that the subject be dropped for the present and that various kinds of signs for railway purposes be made a subject for investigation.

SIGNALS AND INTERLOCKING.

This committee continued its investigation, extending over several years, of an outline description of a comprehensive and uniform signal system suitable for general adoption. It now recommends upper quadrant signals with three fundamental positions—the horizontal position, indicating "stop"; the vertical, "proceed," and the intermediate oblique, "proceed with caution." It also offers two other more elaborate schemes based on these fundamental positions, but providing for other degrees of speed and caution. Four methods of designating stop signals operated under automatic block system rules are suggested.

Another line of investigation followed by the committee was that of the effect of treated and metal ties on track circuits. It points out that in the case of metal ties each rail must be completely insulated from the ties to prevent a short circuit, and that defective insulation at both ends of any tie will throw the track circuit out of service.

The effect of creosoted ties the committee finds to be not serious. As to the effect of zinc treated ties, it summarizes the information received, in response to requests, from 92 railways as follows:—That track circuits a mile long are rendered inoperative by the extensive use of zinc treated ties; that circuits 2,000 ft. long may [illegible] age is noticeable.

[illegible] convention in 1914.

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible] pumping machinery, in which connection the committee is considering internal [illegible] standpoint.

YARDS AND TERMINALS

[illegible] stations of both through and stub types [illegible] of estimating such capacities. Six large [illegible] and conclusions were reached that a holding yard should be directly connected with the [illegible] emptying and refilling of the latter; that [illegible] elevators from a higher or lower level than the train floor; that a maximum curvature [illegible] that of a no. 8 slip switch.

[illegible] built, but believes that only two large hump yards were built during the year. [illegible] operation at the time of the report, and it [illegible] conditions of all hump yards [illegible] made to see if improvements can- [illegible] efficiency. The committee recommends that [illegible] such cars the same velocity as loaded cars switched to adjacent tracks have. It also recommends the "cut-list" system of handling cars on a hump, which consists essen- [illegible] switching a train, and the number of cars in each cut, made out in advance by the yard clerk, a copy to be furnished to each [illegible]

[illegible] the mechanical freight handling equipment [illegible] tigation including telpher systems at two [illegible] other devices at other points. Descriptive matter, drawings, and cost and other fig- [illegible]

IRON AND STEEL STRUCTURES

[illegible] rules for the instruction and guidance of inspectors in mill, shop and field, presents [illegible] gineer, on which the committee has not [illegible] ganization, with a well paid manager at the head.

[illegible]

[illegible] RAILWAY LOCATION

[illegible] however, one by A. K. Shurtleff, Office En- [illegible] Superintendent, Baltimore and Ohio Rd. [illegible]

[illegible] termine the approximate general laws [illegible] as are influenced by changes in physical characteristics of locations. Maintenance [illegible] and from them are derived conclusions which are recommended for adoption, the opinion being expressed that their adoption [illegible] tion.

[illegible] sistance, and continues with a discussion [illegible] mends the substitution for conclusion 2 on page 436 of the Manual. Mr. Begien's conclusion that there is no absolute value for train resistance; the elimination of conclusions 3 and 7 and the substitution of his [illegible] temperatures, and his table of adjustments [illegible]

WOOD PRESERVATION

[illegible] tion of the proper grouping of different [illegible] other part was a study of the merits of [illegible] either of these subjects, except that the [illegible] Forest Products Laboratory be called to the desirability of a study of the regional variation in wood structure by species in [illegible]

[illegible] the consideration of the specifications for fractionation of creosote oil. In this con- [illegible] the flask and the retort. The committee finds that the fluctuations are about the [illegible] retort method.

[illegible] 1911 was the recommendation of forms for [illegible] termination of the absorption of the pene- [illegible] weighing.

[illegible] specification for timber for treatment.

COMMITTEE ON ELECTRICITY

[illegible]

tees of the American Electric Railway Association and the American Railway Association, so that joint recommendations may be made. As to the interference between the clearance diagrams for third rail and for bridge structures previously mentioned, it is recommended that as much of the bridge clearance diagram as interferes with the third rail be eliminated.

Another subject for study was crossings for transmission lines carrying voltages higher than 70,000. In this investigation it reports progress, but requires more time before making recommendations.

Electrolysis was the other subject assigned to it. The committee points out that while this subject was of little interest to railway engineers until the comparatively recent advent of the electric locomotive, electric railway engineers have been studying the matter for many years without reaching unanimity of opinion. The committee has therefore compiled a series of descriptions of the methods of preventing electrolysis employed in various important cases and localities, but it makes no recommendations as to the best methods. It also presents a bibliography on the subject.

CONSERVATION OF NATURAL RESOURCES.

This committee makes no recommendations, but calls attention to the work of the national conservation commissions of the United States and Canada, and follows with a comprehensive report of the work along these lines being done in Canada, covering tree planting and reforestation, prevention of fires from railways, and the natural resources of coal, peat, gas and petroleum.

SPECIAL COMMITTEES.

The special committee on uniform-contract forms presents a form of agreement between railroad company and contractor for construction contracts and a series of stipulations covering the general conditions of such contracts. It recommends that the standing committees which have prepared specifications be instructed to harmonize them with the approved contract form by the elimination of provisions which duplicate or nullify clauses of the contract form, and that the special committee itself be discharged, having completed the work assigned to it.

The special committee on grading of lumber has submitted the rules adopted last year to the various lumber manufacturers' organizations, and has obtained the approval of the respective associations interested in Southern yellow pine, hardwoods and Douglas fir, with slight modifications of the rules. The white pine rules were not acceptable to the Northern Pine Manufacturers' Association. The committee has also during the year made studies of rules for classes of lumber not already covered by adopted rules, and recommends that the rules for cypress, submitted for information last year, be adopted.

Action on Committees' Reports.

Most of the recommendations presented by the various committees for insertion in the Association's Manual were adopted with or without modifications. Those accepted by the association are briefly summarized in the following notes:

BALLAST.—Additions were made to the previously adopted information on "Physical Tests of Stone for Ballast" by specifying whether the maximum or the minimum results as to weight, hardness and other characteristics previously enumerated should govern in selecting stone for ballast.

A method of testing the quality of gravel for ballast was adopted as follows: Five samples of about 1 cu. ft. each are to be taken from different parts of the pit and run over screens of specified sizes to separate the ingredients, these ingredients then to be measured in percentages by volume of the original volume.

RAIL.—A revision of the specifications for carbon steel rails was adopted, together with four forms—a "Report of Mill Inspection," a "Certificate of Inspection," a "Laboratory Rail Report" and a "Tabulation of Results of Mill Inspection of Rails."

TRACK.—Typical plans of nos. 8, 11 and 16 main line turnouts were adopted, as well as a table of functions of the ten chord spiral to supersede a part of the table previously printed in the Manual.

Three rules as desirable agencies in obtaining a better class of section foremen were adopted.

General principles or specifications, or both, were adopted covering steel, wrought iron and malleable tieplates, track bolts, spiral spring nutlocks, ordinary track spikes, screw spikes, and anti creepers. The recommendation prescribing a minimum thickness of ⅝ in. for the parts of tieplates under the edges of rails was rejected, and other slight modifications were made in the rules as presented.

BUILDINGS.—The association indorsed the committee's conclusions as to the value of metallic roofings and those using Portland cement, either with reinforced concrete or with asbestos, and authorized the committee to print in the Manual an abstract of the information presented on roofing materials.

The information on filled in freight house floors was adopted as presented.

WOODEN BRIDGES AND TRESTLES.—The recommendation to use guard timbers, so constructed as to space the ties properly and hold them securely in place, on all open floor bridges was adopted, but the one recommending the use of guard rails on all bridges was referred back to the committee. Where they are used, the recommendations governing them were accepted substantially as presented.

SIGNS, FENCES AND CROSSINGS.—The comprehensive rules presented for use and manufacture of concrete fence posts, were adopted with slight modifications.

The specifications and standard cross section for track construction proposed, were adopted after certain changes had been made, the principal one being the elimination of the maximum limit of 12 in. set for depth of ballast below tie.

SIGNALS AND INTERLOCKING.—The recommended rules for signal practice, using the upper quadrant, and using certain additional signals to give supplementary information were adopted.

RULES AND ORGANIZATION.—Certain modifications of previous rules were accepted, as well as additional rules of a general nature. Of the 40 new rules proposed for minor track officers, all but two were adopted, a number of them being rewritten before adoption. The new rules pertain to tieplates, gauging, curve casement, switches and frogs, switch ties, guard rails, track posts and signs, care of track tools, road crossings, platforms, fences and cattle guards, track jacks, flagging, slow orders, signals, obstructing track, and use of handpush, motor and velocipede cars.

YARDS AND TERMINALS.—The recommendations as to passenger station layouts were adopted as proposed, except that it was voted that "where practicable" curvature for throat switches should not exceed that of a no. 8 slip on tangent.

The recommendations relating to hump yards were adopted with the slight alteration that cut lists should be made in multiple as required.

IRON AND STEEL STRUCTURES.—The 80 rules presented for the guidance of inspectors in mill, shop and field were all adopted (with three or four slight modifications), except no. 23, which provided for certain assembling work at the shop to insure the accuracy of field connections. Two additional rules proposed and accepted provide for checking the dimensions of the materials used in each member and for checking the accuracy of the weighing and of the scales.

ECONOMICS OF RAILWAY LOCATION.—The recommendations as to train resistances, ratings for different temperature ranges, and compensation for curvature, as embodied in the report of R. N. Begien, were adopted as presented, superseding all previously adopted conflicting rules.

UNIFORM GENERAL CONTRACT forms.—A form of agreement and series of stipulations covering the general conditions for a construction contract were adopted substantially as recommended. The few changes made widen the range of the contract as to both character and magnitude of undertakings.

GRADING OF LUMBER.—The lumber grading rules for cypress, as published last year in Bulletin 144, were adopted.—Engineering Record.

Canada Southern Railway Bond Issue.

The Canada Southern Ry. Co. recently offered in England at 106¼% $2,000,000 consolidated guaranteed 50 year 5% gold bonds, due Oct. 1, 1962, being the remainder of $22,500,000 issue and outstanding, out of a total authorized issue limited to $40,000,000. The remaining $17,500,000 bonds can only be issued (1) to refund $130,000 first mortgage bonds of the Leamington and St. Clair Ry. Co. (now amalgamated with The Canada Southern Ry. Co.) which are due Oct. 1, 1945, and are secured upon 14 miles of line, (2), to acquire the undertaking of any other railway, railway bridge, or railway tunnel company, or to acquire the stocks, or other securities of such a company. The issue of the $17,500,000 is regulated by the mortgage deed and cannot exceed an average of $3,000,000 per annum.

The Bonds are secured by a First and Refunding Mortgage dated Oct. 1, 1912, made between The Canada Southern Ry. Co., The Michigan Central Rd. Co. and Guaranty Trust Co. of New York as trustee upon the company's 380 miles of railway (subject to the mortgage for $130,000 above referred to) and upon its equipment and other property now owned or hereafter acquired, including the entire capital stock of the Niagara River Bridge Co. but excluding any other shares or bonds owned by the company.

Railway Building in British Columbia.

The B.C. Minister of Finance, in speaking in the Legislature, Feb. 25, on the finances of the province, said:—"During 1912 there were considerably over 2,000 miles of railway under construction. The lines under construction and for which practically all the contracts have been let, were:

	Miles
"Canadian Northern Pacific on Mainland and Island	600
"Canadian Pacific on Vancouver Island	[illegible]
"Pacific Great Eastern	[illegible]
"Kettle River Valley	[illegible]
"Grand Trunk Pacific	[illegible]
"Kootenay Central	[illegible]
"British Columbia Central	[illegible]
"Others	[illegible]
"Total	[illegible]

"And I may say that for 1,500 miles of these lines the policy of this Government is directly responsible. These huge operations involved an actual expenditure of about $25,000,000 during 1912."

Canadian Pacific Railway Observation Cars on the Austrian State Railways.

On account of the increasing importance of Vienna, the Austrian capital, as a point of interest to tourists visiting Europe, the C.P.R. opened an important agency there for the convenience of its passengers and other Canadians visiting that city.

After the introduction of the observation cars on the C.P.R., which have proved such an attraction to tourists and other travellers between Montreal, Toronto and the west, and especially through the mountain scenery in the Rockies and Selkirks, representations were made to the Austrian government that in view of the great natural beauty of the Arlburg Pass route between Switzerland and Vienna, similar cars would be a great attraction to passengers. After considerable negotiation an agreement was [illegible] with the C.P.R. for the operation of observation parlor cars between Buchs and Vienna on the Arlburg Pass route, and between Vienna and [illegible] for the run to Italy, the arrangements being very similar to those under which Pullman sleeping cars are operated on many lines in the United States and some in Canada.

It was thought that the cars should as closely as possible resemble those used in Canada, in order that they might reproduce the latest types of construction and provide the greatest degree of comfort to passengers. It was of course impossible to duplicate the actual C.P.R. equipment on account of the differences in the clearances, coupling and [illegible] arrangements, etc. Negotiations were entered into with the Nesselsdorf Co., the largest car builders in Austria, and H. H. Vaughan, Assistant to the Vice President, C.P.R., visited Vienna and arranged for the construction of cars that would resemble as closely as possible C.P.R. equipment and be suitable for operation on the Austrian State Railways. On account of [illegible] [illegible] at the Nesselsdorf works, three of the cars were built at the Ringhoffer works, Smichow, Prague. These three were put into service during the past summer, and the balance of five will be delivered during this spring. The service has already become exceedingly popular, and officials of the Austrian State Railways are so pleased with the operation of the service that they are anxious to extend the use of the cars to other routes.

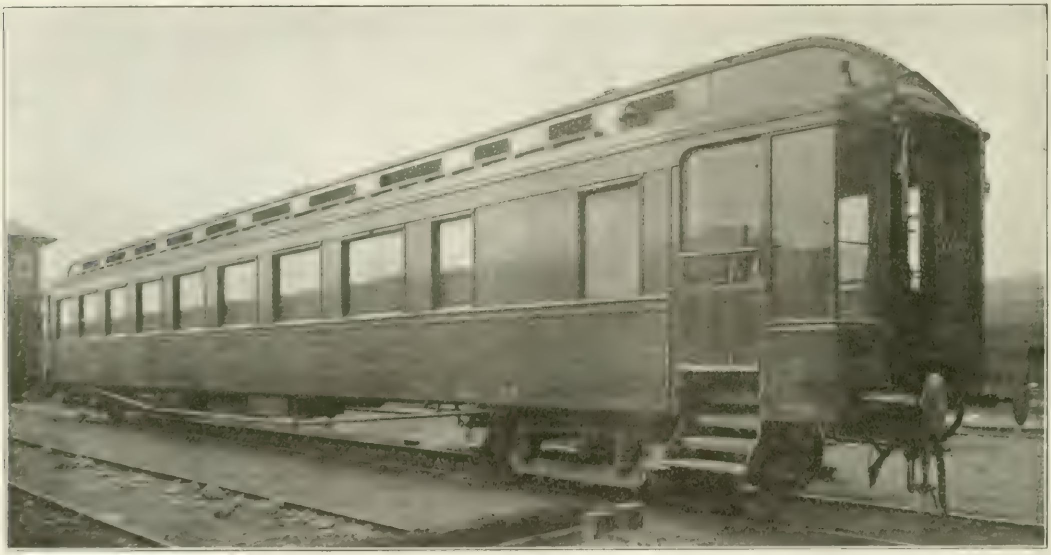
The accompanying illustrations show that the appearance of the Canadian car has been closely obtained. The bodies of the cars are 71½ ft. over buffer plates, and 9 ft. 5⅛ ins. wide over eave moulding, and an over all height of 13 ft. 6⅜ ins. The underframe is of steel, that being standard on Austrian State Railway cars. The buffers, vestibules and underframe in general are all of standard Austrian State Ry. construction. The body of the car is divided into two compartments, one for smoking and the other non smoking. The floor plan is very similar to that of an ordinary C.P.R. parlor car, the chief novelty being the use of two baggage compartments, which are required on account of the large amount of hand baggage usually carried by European travellers. In order to provide storage space for this, the porter of the car checks each piece of hand baggage from the passenger and thus avoids it being laid on the floor of the car or occupying seating capacity. The chairs are the C.P.R. parlor car chair of the "slumber" type. Ten are placed in the smoking compartment and 24 in the non smoking compartment. The equipment and finish are of the latest on C.P.R. parlor car style, and the lighting system is also similar, excepting that the system which is standard on the Austrian State Railways is used.

On account of the objections of the Austrian authorities to the open vestibule platform, arrangements were made for enclosing it in glass, which have proved entirely successful. Unfortunately, it was found necessary to fit a vestibule to the observation end on account of there being no turntables of sufficient length to turn the cars at the ends of some of the runs, and as they had to be handled backwards for short distances the railway authorities insisted on the vestibules being applied.

The cars are sheathed outside in mahogany and lettered "Canadian Pacific," and the appearance throughout of a standard Canadian Pacific parlor car is maintained as closely as possible. The Burnett 4 wheel all steel truck, recently adopted as standard by the C.P.R., is used, it being considered by the Austrian State Railways as decidedly superior to their standard type.

In order that the cars built in Austria should be as closely similar in construction and finish as the C.P.R. cars from which they are modelled, sample sections of the C.P.R. cars were made up in the Angus shops in Montreal, and shipped bodily to Austria as a guide to the finish desired. The main thing sent was a full cross section of a standard C.P.R. observation car, including the desk and book case, showing the style of finish and marquetry. The other sample parts sent included a hopper, washstand, water cooler, towel racks, brush racks, soiled towel rack, drinking glass holder, centre and deck lights, deck sash, stencilling and lettering, sample of outside finish, section of car side, sample of doors, door locks and hand rails, deck sash screens, inlaid rubber flooring, roof canvas, inside and lavatory door locks, door holder and door checks, mosaic tiling, cork tiling, carpet strip, toilet room tiling, passage way marquetry, pantasote blinds, toilet room window glass, chairs, and inside lettering.

The photographs on this page and the next, show how successfully the Canadian Pacific type of parlor car has been followed, with the alterations imposed upon it by foreign railway practice, and the car as a whole exceed in comfort, beauty of finish, size and general appearance, any that have ever been operated on the European continent.


C.P.R. Observation Cars Built for the Austrian State Railways.

Record Performance of an Atlantic Locomotive on the Pennsylvania Rd.

Some results of peculiar interest were developed recently in a series of tests at the Pennsylvania Rd.'s testing plant at Altoona, Pa., on a unique Atlantic passenger locomotive. The locomotive in working order weighs [illegible] lbs., with 23 by 26 in. cylinders and 80 in. driving wheels. The total heating surface is 3661.3 sq. ft., made up as follows: tubes, 2433.2, superheater pipes, 980.1, and firebox, 248. The tubes are 15 ft. 8½ ins. long and the grate area is 55.13 sq. ft.

Some 40 tests were made at speeds commencing at 120 r.p.m., running up progressively to 160, 200, 240, 280, 320 and 360, the latter corresponding to a speed of 84.42 miles per hour. The following are some of the observed results at the latter high speed: cut off, 40.6%, mean pressure, 205.5 lbs. per sq. in.; draft in smokebox, 14.2 ins. of water, and in ashpan, 0.16 in.; dry fuel, 6,380 lbs. per hour and 115.5 lbs. per sq. ft. of grate; water to boiler per hour, 38,846 lbs.; equivalent evaporation, 52,084 lbs.; evaporation per hour per sq. ft. of heating surface, 16.9 lbs., and per lb. of dry fuel, 8.2 lbs.; boiler horsepower, 1509.7; superheat, 233.7 degs.; dry steam to cylinders, 37,594 lbs. per hour; indicated horsepower, 2350.1; dry fuel per i.h.p., 2.71 lbs.; dry steam per i.h.p., 16 lbs.; drawbar pull, [illegible] lbs.; dynamometer horsepower, [illegible]; dry fuel per d.h.p., [illegible] lbs.; dry steam per d.h.p., [illegible] lbs. Machine efficiency (ratio of d.h.p. to i.h.p.), [illegible]. Machine efficiencies as high as [illegible], were developed at speeds of [illegible] r.p.m., when the dry steam per d.h.p. dropped as low as 20.6 lbs. These figures show the development of 1 i.h.p. per 99.2 lbs. of locomotive weight, a result said to be unequalled.

The [illegible] on the figures obtained in these tests, but lower figures were obtained in the test of a smaller Atlantic type locomotive. With an i.h.p. of 1574.8 and d.h.p. of 1339.6 at 46.7 m.p.h., the principal fuel and water results are as follows: dry fuel per i.h.p., 2.3 lbs.; dry steam per i.h.p., 16.1 lbs.; dry fuel per d.h.p., 2.7 lbs.; dry steam per d.h.p., 18.9.

While it is conceded that the d.h.p. is the best basis in denoting the performance of a locomotive, it must be borne in mind that the peculiar conditions of the testing plant, with the locomotive standing on large rollers connected to absorption brakes, and the drawbar pull measured directly on a traction dynamometer, the locomotive is not subjected to a wind resistance, and has no tender to haul. In consequence, both these resistances must be deducted when the locomotive is taken out for a road test with a dynamometer car. Due consideration must be given to the fact that these are running conditions, and do not take into consideration the standby losses while the locomotive is [illegible], nor the fuel consumption on the return trip, or [illegible] holding time.

Interior View of Observation Cars for Austrian State Railways.

Flour Unloader at Canadian Pacific Railway Fort William Shed.

During 1911 season the new C.P.R. shed at Fort William, Ont., to handle the [illegible] Upper Lakes [illegible] was completed and put in service. It is a [illegible] structure, [illegible] the [illegible] for the [illegible] of rail [illegible] and the boats can be [illegible] unloaded from the vessel and loading on cars. For the [illegible] rail freight, there is a track along the rear of the building, the height [illegible] at the level of the freight shed. Along this side are 19 doors, spaced for the freight car door openings. The [illegible] face of the shed has a similar track and door arrangement along that side for the outgoing rail freight.

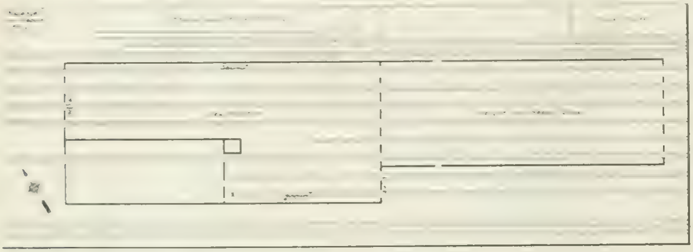
One of the principal articles of shipment by water from this point is flour in bags, and for the handling of this product, a flour bag loading machine was devised by R. Armstrong, who was then Superintendent there and is now Superintendent at Saskatoon, and was built [illegible]. Along the rear wall, and just under the upper floor there is an endless belt, 26 ins. wide, running the full length of the building, driven from a motor at one end. It is similar in every way to the usual conveyer belt, the upper part running over closely spaced idler pulleys. The belt is open the length of the building. At five points near one end of the shed, corresponding to the port openings of the vessel to be loaded, there are cross belts of the same width under the floor, at a slightly lower level, enabling the bags of flour on the belt to pass under the floor. These lead to chutes at the front side of the building, to which inclines can be attached for chuting the bags directly into the hold of the vessel.

On this longtitudinal travelling belt are dumped the bags of flour from as many cars as are ready to be unloaded, irrespective of the make of the flour, it not being necessary to use the belt for only the one brand of flour at a time, as explained further on. At each of the cross belts on which it is desired to divert the bags into the vessel's hold, there is arranged a vertical board, at an angle of 45 degrees to the motion of the longtitudinal belt. This board, coming down just over top of the belt, diverts the bags of flour on to the cross belt, and thence into the hold. These diverting boards are set in vertical guides, each with a rope passing up over a pulley above. At each of the cross belts being occupied there is stationed a man who either leaves the board down and diverts the bag on to the cross belt or raises the board and allows the bag to pass to the cross belt on which it should be diverted. The belts move at a good rate of speed and consequently, quick action on the part of the board operator is required, but by its means, as many as five different brands can be unloaded on the belt, and be diverted to the proper hold. It is the usual thing to unload as many as five 30 ton cars in an hour, or at the rate of 150 tons an hour. The gang of men employed is comparatively small.

Records of tests made on chrome vanadium steel wheels on the Virginian Ry. [illegible] that these wheels offer the means of increasing wheel mileage where conditions have resulted in a great decrease in mileage secured from other steel wheels.

Addition to Intercolonial Railway Freight Car Shop at Moncton, N. B.

The existing freight car shop is one of the buildings comprising the [illegible] in 1906 and is 360 ft. by 138 ft. [illegible] end of the present shop, extending northerly 360 ft. to the north end of the planing mill, at which [illegible] will be [illegible] ft. [illegible]. From the [illegible] will extend southerly in line with the west side of the planing mill to the north end of the present shop, 200 ft., then easterly 44 ft. to the northwestern corner of present shop. This addition will cover an [illegible] sq. ft. With the present [illegible]



New Addition to Intercolonial Ry. Freight Car Shop.

[illegible]

The construction will be similar to the present shop, with foundations and walls of concrete, and well lighted reinforced cinder concrete slab roof covered with a layer of cork insulation 1 in. thick, on which will be 3 plies of asbestos roofing and insulating felt mopped on with Trinidad Lake asphalt. The roof will be well lighted by skylights. The internal frame will be of structural steel, the roof trusses being spaced 20 ft. centres, with a clearance under lower chord of 20 ft. The heating will be by the hot blast system, carried under ground by ducts and registers located at floor line along the walls. The building will be equipped with [illegible] ers for the convenience of the workmen. [illegible] by Aug. 1.

Safety First on the Canadian Pacific Railway.

The C.P.R. has taken up the safety [illegible] on both its eastern and western lines, the organization being in [illegible] similar to that of the Michigan Central Rd. described in Canadian Railway and Marine World for Nov., 1912. [illegible] organizations are [illegible]. As the movement on the C.P.R. is much newer than that on several of the U. S. lines, including the M.C.R., the scheme has not as yet been fully developed, but, with characteristic energy, it is being [illegible] it will be in good working condition in a [illegible]

On the Eastern Lines the system has been in operation for about two years. There are divisional committees, presided over by the general superintendents, the whole to come under the supervision of the general superintendent of transportation. In each division, the several districts have their separate organizations, presided over by the superintendent or assistant, and [illegible] composed of the several higher district officials, with representatives from the enginemen, trainmen, yardmen, bridge and building men, roadmasters, gang foremen, agents, train dispatchers, shopmen and carmen. Divisional meetings are called every three months for the discussion of the subject, with district meetings every month, at which the matter is threshed out from the lower man's position. As typical of the matters discussed at a recent meeting of a district in Toronto, the reports received and considered included those from the signal department, car department, yards, bridge and building department, trainmen, shops, and general or miscellaneous.

On the Western Lines, in addition to the general organization, there are divisional safety committees, as on the Eastern Lines, composed of the division superintendent, master mechanic, division engineer, and other division officials. In each division there will be a separate organization for each of the several districts, presided over by the superintendent or assistant, with the committee composed of minor officials and representatives from all the different departments, the same as on the Eastern Lines. The movement has been more recently introduced in the West.

The following are a few of the resolutions headed "Safety First," which the men on the C.P.R. have been asked to make this year: —"I will not stand in front of a moving car or locomotive to board the same. I will always respect the blue flag, as the lives of my fellow employes depend on it. I will not stand between the cab and the apron when coaling a locomotive. I will not push a drawbar with my foot or hands when cars are moving or are close together. I will turn down boards with nails sticking out of the same. I will not adjust a coupler, turn an angle cock, or uncouple hose when a car is in motion. I [illegible] on to the side of a car when passing platforms, buildings, or obstructions close to the tracks. I will not use 2 in. nails in building a scaffold where 4 in. nails would be safer. I will not push cars into a freight shed or on team tracks without making sure that all men and teams are clear. I will do all I can to stop the loss of life and lessen the injuries to my fellow employes. I will not kick cars into a siding where boarding cars, or cars being loaded or unloaded are standing. I will remember it is better to let a train be late than to cause an accident. I will not take chances. I believe that safety first is simply habit, and I will cultivate the habit. The prevention of accident is a duty I owe to myself, my family, and my fellow employes. I believe that some accidents are not inevitable, and I know that the great majority can be prevented by care. I will immediately take out sufficient accident insurance to protect myself and those dependent upon me."

Stresses in Railway Track.

Stresses in railway track are prominent among the unknown factors in engineering regarding which there is need for experimental investigation and the collection of data based on service observations. Emphasis has again been laid on this point in the report of the U.S. Interstate Commerce Commission on the derailment of the Twentieth Century Limited on the New York Central Rd. on March 31, 1912. The finding is that the derailment was due to the spreading of the track, probably because of the inability of the outer rail of the curve, in its shimmed position, resulting from winter conditions, to withstand the thrust of the locomotive running at high speed. The track seems to have been in a condition fulfilling the requirements of the best practice, though the unusually severe winter had necessitated extensive application of the customary measures for maintaining surface at such times. Here is where the argument is raised, in that the line of demarcation between safe and unsafe practice in track construction has not been determined. It is not known what margin of strength is present in track above the immediate demand of the load. Though it is extremely desirable to have this information, there are many difficulties to be met in obtaining it, due to the large number of variables involved. Type of construction, drainage, season and similar factors are involved in the track itself, while speed, condition of equipment, curvature and surface are among the variables affecting the application of the load. But some very good progress has already been made toward definite information. The American Railway Engineering Association is giving attention to the subject, and has made preliminary studies leading toward more accurate knowledge of track strength and stresses. Among these might be mentioned those of last year on roadbed pressures, the tests of spike pulling values and the impact measurements on bridges. The investigations of the Pennsylvania Rd. on the proper depth of ballast, reported to the Association in 1911, also throw much light on the distribution of loads on ties and roadbed. The Canadian Society of Civil Engineers, recognizing the probable existence due to increased loads of stresses not satisfactorily distributed by the old, short ties, has discussed the question of a longer tie. These are indications that an effort is being made to obtain practical data bearing on track. If research is further encouraged, a much more definite basis of design than the present should be obtained, though it may not be practicable to bring it to the exactness of the data underlying the design of steel bridges.

At the Long Island Rd.'s Brooklyn station where a heavy suburban traffic is handled, a ticket issuing machine has been installed. It can be operated by four men, each having a separate recording apparatus. The tickets are issued in amounts from 5 to 35 cts., and are printed directly in the machine. A hundred a minute can be turned out.

The 800,000 lb. Riehle testing machine at Lehigh University, South Bethlehem, Pa., is being utilized for the testing of rails by the American Railway Engineering Association's rail committee. These tests are expected to aid materially in the effort to reduce the number of defective rails. The present phase of the research is that of investigating the rate of reduction of the cross section of rails in rolling from the ingot to the finished rail. One hundred pieces of 100 lb. A.R.A. section, each 2 ft. long, are being used.

Rapid Method for Volume Calculation in Railway Cuts and Fills.

By Chas. W. Rauch, Hanceville, Alabama.

The accompanying tables were designed for the rapid computation of yardage in railway work, after the areas of the sections have been figured. The tables are based on a distance between sections of 50 ft., but can be used satisfactorily for other distances by multiplying by the proper factor, i.e, twice the distance between stations in feet, divided by 100. In using these tables, no difficulty need be experienced as to the position of the decimal point if it be kept in mind that the final result in cubic yards is always equal to 8% less than the sum of the two end areas, these being expressed in sq. ft. In the first column of the tables will be seen values of double end area, and opposite the corresponding values of volume between stations in cubic yards, zeros and decimal points being omitted. For instance, 1404 sq. ft. is equivalent to 1300 cu. yds., 28 sq. ft. is equivalent to 25.9 cu. yds., etc.

In using the tables proceed as follows: First add the two end areas of the sections, expressing the result to the nearest tenths; find the nearest value in table 1 and subtract, the figures opposite being the first one or two digits of the result; the remainder are found opposite the values in table 2 expressed by the result of the subtraction. As an example assume station 7240 to have an end area of 732.31, and station 7240 plus 50 an area of 243.16. The double end area is then 975.5. In table 1 we find 9720 equals 90. Subtracting mentally 9720 from 9755 we obtain 35, and consulting 35 in table 2 we find 324. The result is then 903.2 cu. yds.

For double end areas of values less than 109 sq. ft., table 2 may be used alone. Neglecting temporarily the figure in the tenths place find the corresponding value in the second column; then arithmetically add to this value the digit expressing the tenths of the area value, except it be 7, 8 or 9, when add one less in each case. For instance, 62.3 sq. ft. is equivalent to 57.4 plus 0.3 or 57.7; however 62.8 equals 57.4 plus 0.7 or 58.1 cu. yds.

For larger areas, a combination of these two methods must be used. For example, let us say we have a double end area of 6824.3 sq. ft. In table 1 we find 6804 equals 63; subtract 6804 from 6824, and consult table 2 for 20; this gives us 185. We now add the 3 to 185, giving us 188. The final result is then 6318.8 cu. yds.

As an example of odd stations, let us assume that station 5932 has an end area of 633.24 and station 5932 plus 27 an end area of 244.80. The double end area is then equal to 878.0, giving a yardage of 8130 on a basis of 50 ft. Since it is 27 ft. we multiply by 0.54 giving us 439.0 cu. yds.

This method is especially valuable to railway resident engineers, as it will save a great deal of time and work in preparing monthly estimates. A little practice with the tables should enable one to perform the operation almost as fast as the result can be set down on paper.—Engineering and Contracting.

TABLE 1.

108	1	1512	14	2916	27	4320	40	5724	53	7128	66	8532	79	9936	92
216	2	1620	15	3024	28	4428	41	5832	54	7236	67	8640	80	10044	93
324	3	1728	16	3132	29	4536	42	5940	55	7344	68	8748	81	10152	94
432	4	1836	17	3240	30	4644	43	6048	56	7452	69	8856	82	10260	95
540	5	1944	18	3348	31	4752	44	6156	57	7560	70	8964	83	10368	96
648	6	2052	19	3456	32	4860	45	6264	58	7668	71	9072	84	10476	97
756	7	2160	20	3564	33	4968	46	6372	59	7776	72	9180	85	10584	98
864	8	2268	21	3672	34	5076	47	6480	60	7884	73	9288	86	10692	99
972	9	2376	22	3780	35	5184	48	6588	61	7992	74	9396	87	10800	00
1080	10	2484	23	3888	36	5292	49	6696	62	8100	75	9504	88		
1188	11	2592	24	3996	37	5400	50	6804	63	8208	76	9612	89		
1296	12	2700	25	4104	38	5508	51	6912	64	8316	77	9720	90		
1404	13	2808	26	4212	39	5616	52	7020	65	8424	78	9828	91		

TABLE 2.

1	009	15	139	29	269	43	398	57	528	71	657	85	787	99	917
2	019	16	148	30	278	44	407	58	537	72	667	86	796	100	926
3	028	17	157	31	287	45	417	59	546	73	676	87	806	101	935
4	037	18	167	32	296	46	426	60	556	74	685	88	815	102	944
5	046	19	176	33	306	47	435	61	565	75	694	89	824	103	954
6	056	20	185	34	315	48	444	62	574	76	704	90	833	104	963
7	065	21	194	35	324	49	454	63	583	77	713	91	843	105	972
8	074	22	204	36	333	50	463	64	593	78	722	92	852	106	981
9	083	23	213	37	343	51	472	65	602	79	731	93	861	107	991
10	093	24	222	38	352	52	481	66	611	80	741	94	870		
11	102	25	231	39	361	53	491	67	620	81	750	95	880		
12	111	26	241	40	370	54	500	68	630	82	759	96	889		
13	120	27	250	41	380	55	509	69	639	83	769	97	898		
14	130	28	259	42	389	56	519								

Protection of Exrta Gangs in Maintenance Work.

The safety of extra gangs in railway maintenance work is a matter deserving special attention in connection with the present widespread movement for the protection of employes from injury. The extra gang is in many cases largely made up of foreigners who are unfamiliar with the English language and with American railway practices and conditions. This renders them particularly subject to danger of injury, and places a greater responsibility for their safety upon the officials in charge of their work and upon their more intelligent associates on the line. The obligation may be in part met by providing for the instruction of such foreigners and by impressing upon the workmen who are better equipped the necessity of great care in the performance of duties affecting the safety of these men. Emphasis was recently laid on some of these points on the Chicago Great Western Rd. in an appeal to American employes to attend closely to such matters as flagging, where the safety of the extra gang men may be involved, and to enforce the closing of camp car doors on the side next to the running track. It was pointed out that increased safety results directly from these efforts and also that the new men learn through the examples thus set. Instructions printed in several languages are often helpful in promoting work of this nature. The United States Steel Corporation has met with encouraging results in its efforts both along educational and direct lines toward the protection of foreign workers, and other large companies are having similar experiences.

Railway Freight Statistics.

The aggregate tonnage of freight carried by Canadian railways during the year ended June 30, 1912, was 89,444,331 tons, against 79,884,282 tons in the previous year. Of the total tonnage 63,186,732 tons originated on the home lines, and 26,257,599 tons on the lines of other companies, as against 55,152,430 tons originated on the home lines and 24,731,852 tons received from connecting lines, in the previous year. In the following table are the details for the various lines. Figures showing the total freight tonnage on each line were given in Canadian Railway and Marine World for January, pg. 67.

Alberta Ry. and Irrigation Co.	[illegible]	[illegible]
Algoma Central and Hudson Bay	[illegible]	[illegible]
Atlantic, Quebec and Western	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
Bay of Quinte	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible] and Hudson Bay	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
Brockville, Westport and [illegible]	[illegible]	[illegible]
Canada Southern	[illegible]	[illegible]
Canadian Government Rys. I.R.C.	[illegible]	[illegible]
P.E.I.		[illegible]
Canadian Northern	[illegible]	[illegible]
" " Ontario	515,097	[illegible]
" " Quebec	[illegible]	[illegible]
Canadian Pacific	[illegible]	[illegible]
Cape Breton	3,499	[illegible]
Caraquet	[illegible]	[illegible]
Central Ontario	[illegible]	99,945
Crow's Nest Southern	[illegible]	[illegible]
Cumberland Ry. and Coal Co.	[illegible]	[illegible]
Dominion Atlantic	[illegible]	[illegible]
Eastern British Columbia	139,431	1,393
Elgin and Havelock	[illegible]	3,028
Essex Terminal	[illegible]	74,892
Grand Trunk	[illegible]	[illegible]
" " (Canada Atlantic	[illegible]	903,014
Halifax and South Western	217,760	[illegible]
Hereford	[illegible]	2,783
Inverness Ry. and Coal Co.	[illegible]	[illegible]
Irondale, Bancroft and Ottawa	[illegible]	4,655
Kent Northern	[illegible]	4,595
Kettle Valley	2,723	[illegible]
Kingston and Pembroke	84,456	[illegible]
Klondike Mines	23,841	
Lotbiniere and Megantic	54,447	[illegible]
London and Port Stanley	50,904	[illegible]
Maine Central	198,283	
Manitoba Great Northern	114,648	79,646
Maritime Coal Ry. and Power Co.	[illegible]	4,456
Massawippi Valley	[illegible]	[illegible]
Moncton and Buctouche	21,068	[illegible]
Montreal and Atlantic	533,802	805,799
Montreal and Province Line	24,389	[illegible]
Montreal and Vermont Junction	[illegible]	[illegible]
Morrissey, Fernie and Michel	371,099	[illegible]
Midland Ry. of Manitoba	22,184	
Napierville Junction	17,926	[illegible]
Nelson and Fort Sheppard	25,333	[illegible]
New Brunswick and P.E.I.	[illegible]	[illegible]
New Westminster Southern	52,277	
North Shore		
Ottawa and New York	[illegible]	[illegible]
Phillipsburg Ry. and Quarry Co.	[illegible]	10,082
Quebec Central	[illegible]	[illegible]
Quebec and Lake St. John	225,937	[illegible]
Quebec, Montreal and Southern		276,050
Quebec Oriental	[illegible]	[illegible]
Quebec Railway, Light and Power Co.	153,068	[illegible]
Red Mountain	[illegible]	[illegible]
Rutland and Noyan	[illegible]	[illegible]
Salisbury and Albert	[illegible]	
Schomberg and Aurora	8,421	
Stanstead, Shefford and Chambly	[illegible]	
St. Lawrence and Adirondack	565,267	[illegible]
St. Martins	[illegible]	[illegible]
Sydney and Louisburg	4,153,131	[illegible]
Temiscouata	[illegible]	[illegible]
Timiskaming and Northern Ontario	[illegible]	
Thousand Islands	14,712	[illegible]
Toronto, Hamilton and Buffalo	[illegible]	
Vancouver, Victoria and Eastern	949,954	4,654
Victoria Terminal Ry. and Ferry Co.	7,100	[illegible]
Victoria and Sidney	[illegible]	[illegible]
Wabash (in Canada)	1,317,283	[illegible]
Wellington Colliery	500,006	[illegible]
York and Carleton	[illegible]	[illegible]
Total	[illegible]	6,257,598

Instructions for Fighting Fires on or near Railway Right of Way.

The Secretary of the Board of Railway Commissioners has notified railway companies that the Board has under consideration the amendment of regulation 15 of order 16570, to read as follows:—"Every such railway company shall give particular instruction to its employes in relation to the foregoing regulations, and shall cause such instructions to be posted and maintained at all stations, terminals and section houses along its lines of railway. Said instructions to employes shall also be included in the employes' time tables in use between April 1 and Nov. 1 of each year. As to lines or portions of lines where, in its judgment, the fire danger is not material, the Board may, upon application, waive the requirements as to the posting of public notices and the inclusion of special instructions in employes' time tables."

The companies have been asked to submit any representations they wish to make in connection with the proposed amendment.

The secretary has also sent the companies a tentative draft of instructions which may be used, if desired, as a basis for the preparation of special instructions to employes, as required in regulation 15 above mentioned. The issuance of these particular instructions is not prescribed. It is, however, considered essential that the instructions to be issued shall embody the substance of regulations 6, 7, 10, 14 and 17 of order 16570. The draft is as follows:—

WORKING INSTRUCTIONS IN CONNECTION WITH ORDER 16570 OF THE BOARD OF RAILWAY COMMISSIONERS FOR CANADA, DATED MAY 22, 1912.

TO ENGINEERS, CONDUCTORS, Baggagemen and Firemen:—It will be the duty of train and engine crews on freight and passenger trains, when discovering any fire adjoining the right of way of the railway to stop and use every effort to extinguish it. In the event of this being impracticable, either by reason of the extent of the fire or its distance from the right of way, the train will proceed to the nearest telegraph station, where the conductor will wire a report to the superintendent giving the exact location of the fire, and the action taken by engine and train crews concerning same. It will also be the duty of engineers to stop and notify the first section gang passed of any fire not extinguished as above.

No employe shall do or cause damage or injury to any of the fire protective appliances on any engine; open the back dampers of any engine while running ahead, or the front dampers while running tender first; or permit fire, live coals or ashes to be deposited on tracks or right of way outside of yard limits, unless same are extinguished immediately thereafter.

TO AGENTS:—Engineers and conductors of all trains have received instructions to report fire along the right of way and adjacent thereto, and it will be your duty to immediately wire the superintendent, giving the location of the fire, extent of same, and any other information which might be of value, particularly as to the number of men needed to control the fire and extinguish it. The local fire inspector of the Railway Commission should be first notified immediately, giving the exact location of the fire, and its extent.

TO ROADMASTERS, ASSISTANT ROADmasters, Master Carpenters and other Officials:—In cases where fires are reported, it will be the duty of any division official to proceed to the scene of the fire as quickly as possible and take charge of the work of fire fighting until he can be relieved by the division roadmaster. The man first on the ground should organize his men to do the best work possible, and, when this is done he should immediately proceed to investigate the origin of the fire, location where it started; get statements from all witnesses and make every effort to learn the origin and responsibility. The law as now interpreted practically makes this company responsible for fires starting within 300 ft. of the track, unless it can be shown that the company is not responsible. It is necessary, therefore, to positively determine the origin in order to relieve the company of the responsibility. The first officer on the ground should endeavor to hold a joint investigation with the local fire inspector of the Railway Commission, or other local forestry officer, and agree upon the origin of the fire. This will avoid disputes later on.

TO CHIEF DISPATCHERS:—In all cases where fires are reported, it will be the duty of the dispatcher to get full information as to the extent of such fire, its location and the number of men necessary to fight it. It will also be the duty of the dispatcher to furnish whatever train service will be required to move extra gangs, section gangs, or bridge crews, to the fire immediately, giving this movement preference if the emergency requires it.

TO SECTION, EXTRA GANG AND Bridge Foremen:—In all cases where fire occurs, it will be the duty of all section crews, extra gangs and bridge crews to immediately proceed to such fire and extinguish same, remaining as long as may be necessary to do this, and it must be understood that this is the most important work that can be done, and the carrying on of your work, which may be important, must be set aside until the fire is under control, and is completely extinguished. The section foreman on whose district the fire occurs, will, in the absence of an official of the company, make a thorough investigation regarding the origin of the fire, submitting full report to the roadmaster.

Between April 1 and Nov. 1 no ties, cuttings, debris or litter upon or near the right of way shall be burned except under such supervision as will prevent such fire from spreading beyond the strip being cleared. Officers of the Railway Commission may require that no such burning be done along specified portions of the line, except with the written permission or under the direction of such officer.

PENALTY (Reg. 17, order 16570):—"If any employe or other person included in the said regulations, fails or neglects to obey the same, or any of them, he shall, in addition to any other liability which he may have incurred, be subject to a penalty of $25 for every such offence."

Recent tests on freight car trucks have developed the following conclusions:—1st, that the curve friction is almost directly proportional to the degree of curvature; 2nd, that the frictional resistance on new rails is from 10 to 25% less than on old rails; 3rd, that old wheels with high flanges give practically 100% more friction than new wheels; 4th, that a rigidly square track has less friction than a loose one; and 5th, that a truck with atmospheric temperature from 40 to 50 degs. Fahr., when lubricated with winter oil, has about 43% less friction than others lubricated with summer oil.

The C.P.R. hotel at Banff, Alta., will be open continuously, in future, instead of only in summer as heretofore.

Efficiency in Railway Engineering Work.

The addresses of both the retiring President of the American Railway Engineering Association, Mr. Churchill, and the incoming President, Mr. Wendt, at the recent convention emphasized that more devolves upon the railway engineer than merely the preparation of plans, specifications and rules, which if properly followed will give the desired results. The further duty is to see that they are followed. Mr. Churchill appealed for better workmanship, and noted the tendency to supervise work more closely. Mr. Wendt, pointed to the most effective way of securing good workmanship by adopting sound and efficient principles of organization—and he finds ample justification for the best organization possible since 55% of railway operating expenses are due to labor. He has just established the unit system of track and roadway maintenance on the Pittsburgh and Lake Erie Rd. Other roads are adopting similar systems. Many managers, however, are sceptical of recent ideas in organization, even though the methods are successfully applied in many industries. The Railway Engineering Association, as a whole, is evidently much interested in the subject, if judged not only by the discussions on the floor but also by the number of committees that have been directed to study labor and organization problems. With the close attention that will be given these matters by the association this year the railways should soon be in a position to judge to what extent and in what ways they can profitably employ in maintenance and construction work the methods of management advocated in recent years.

Food Supplies for Construction Camps.

The following list, compiled by a Canadian Pacific Ry. engineer from several years' store sheets, and representing the daily ration per man in construction camps, will be of interest to engineers and contractors who have to maintain construction camps in the wilds. The bacon and flour may be a little high, but much depends upon work being done, working temperature and cook's ability. If tinned meat be taken, the bacon can be reduced. Beside the supplies in the list, a little lard was used in the cooking, for which no allowance is made. The total of the above ration is 4.32 lb. Other supplies on a per diem basis were:—Soap, 0.05 lb.; candles, 0.01 lb.

DAILY RATIONS

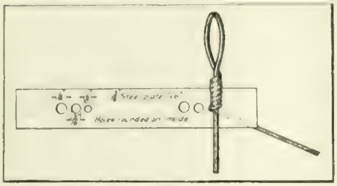
Flour	1.25	lbs
Bacon and ham	1.40	"
Beans	0.47	"
Dried fruit	0.20	"
Sugar	0.40	"
Tea	0.04	"
Coffee	0.08	"
Baking Powder	0.06	"
Salt	0.10	"
Mustard and pepper	0.01	"
Currants	0.03	"
Raisins	0.01	"
Oatmeal	0.15	"
Rice	0.05	"
Potatoes or vegetables	[illegible]	"
Syrup	0.03	"

The use of track troughs for watering locomotive tenders has been practically impossible in Canada, the only line operating them being the Michigan Central Rd. on its Canada Southern Division. Ice on the departing end of the track trough is also experienced even in the milder climates further south, but this trouble has been eliminated on one road by simply laying steam pipes between and on each side of the departing end of the trough, melting the ice, and keeping the roadbed clear.

A Wire Splicer.

By H. C. Swartz, Master of Bridges and Buildings, Grand Trunk Railway, St. Thomas, Ont.

The wire splicer shown on accompanying drawing is used to splice wires without taking out the temper as is apt to be the case when the wire is wound without pinchers. This splicer is of special use in connection with semaphores where the wire has to be

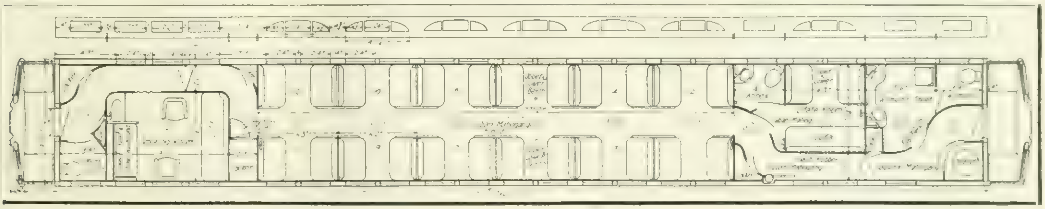


A Wire Splicer.

covered and passes through pipes filled with oil, it being necessary to connect up the hardened wire in the pipes with the regular semaphore wire at either end. It is also useful in making "tell tales" for overhead bridges and for making coil springs.—Railway Age Gazette.

New Sleeping Cars for Canadian Pacific Railway.

The C.P.R. has recently had delivered 30 sleeping cars from the United States, a portion of the order it placed there last year. The length over end sills is 72 ft. 8 ins., with an over all height from top of rail of 14 ft. 5 9-16 ins. The construction is C.P.R. standard throughout, of the usual all wood construction, with the exception of the end framing, which is composed of six 3 by ⅝ in. wrought iron end posts, the ends of which are turned at right angles and secured to the end sills and end plate with 3 by 3 by ⅝ in. corner angles. The underframing is all wood, save the needle beams, which are rolled steel 5 by 8 in bulb tee irons, 20.2 lbs. per ft.



Plan of New Sleeping Cars for Canadian Pacific Railway.

The interior finish of the body of the car is of the C.P.R. standard mahogany finish, using the best grade of Cuban mahogany, the finish being in the marquetry design of the Chippendale style. The smoking room differs from the body, in so far as the finish is in English oak. Through the whole car, the ceiling is of ¼ in. agasote, finished in colors. The section seats and sofas in the main part of the car and state room are upholstered in green frieze plush, while the seats and lounges in the ladies' retiring room and the men's smoking room, are upholstered in Spanish leather.

The Gold duplex system of hot water circulation, with Frumweller heater, controlled by a C.P.R. standard heat controller, is the heating arrangement used. The lighting is electric, using a 24 volt axle generator, with 24 cells of storage batteries arranged in two parallel sets of 12 each. Clusters in opal shades in the clerestory of the car provide the main lighting, with individual seat lighting from small opal corner lights at the window side of each seat. The upper berths are also illuminated, and are provided with the latest type of cut out switches, whereby the current is automatically shut off by the closing of the upper berth.

The air brake arrangement is of the Westinghouse L.N. 1612 type, with hand brake arrangement co-operating therewith, and operating from both ends of the car.

The 6 wheel trucks are of special design, built up of steel. They have a wheel base of 11 ft., and are 6 ft. 10¼ ins. wide. They are equipped with 36¼ in. cast steel wheels, mounted with Krupp steel tires, and are designed for a capacity of 80,000 lbs. The journals are 5 by 9 ins. The trucks are provided with Simplex brake beams, American Brake Shoe and Foundry Co.'s cast steel back brake shoes, McCord journal boxes, and Susemihl side bearings.

In general points of comfort, they compare with the usual standard type of C.P.R. car, and differ only in minor improvements, which are constantly being introduced in the company's rolling stock.

A Bolt Puller.

By H. C. Swartz, Master of Bridges and Buildings, Grand Trunk Railway, St. Thomas, Ont.

The shackle bar is of use for withdrawing bolts without heads, as shown in the illustration. By pressing down on the bar, the toe of the bar and the shackle grip two sides of the bolt and the harder the bar is pressed down the tighter is the grip. By raising the bar slightly the shackle is loosened and a new grip can be secured. Where the bolt is too far down in the timber to secure a grip, a little adzing will usually enable the device to secure a hold on the bolt.—Railway Age Gazette.

Improvements in Grand Trunk Railway Ottawa Shops.

A number of minor improvements have been introduced in the G.T.R. shops at Ottawa, Ont., which were taken over on the absorption of the Canada Atlantic Ry. In the locomotive house, an air jacking system is in use in the pits. At the front of the pit are located two 24 in. cylinders, side by side, the upper end of the plungers of which are flush with the top of the rail. These are supplied with 110 lb. air. They are found very useful in jacking up the front ends of locomotives for the removal of driving springs, for which operation they are used mostly, though the field of usefulness is more extensive.

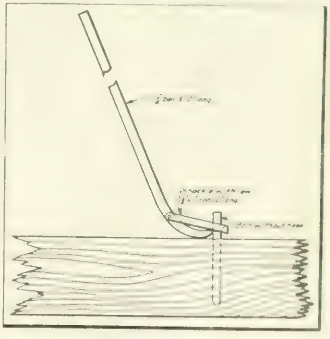
The air storage capacity has been increased by the substitution of two tanks, 5 ft. diam. by 15 ft. high, for three smaller tanks, the combined capacity of these three being only equal to one of the new tanks.

The steam, water and air connections in the locomotive house all come down the same column between the pits. Trouble is of more or less frequent occurrence in keeping the valves on these several connections tight, so that it is no uncommon sight in a locomotive house to see the floor around the base of the service column, flooded with drip water. In the locomotive house, no trouble is experienced with the present arrangement, which consists of a concrete shell box, 4 ft. square, rising to a height of 18 ins. above the floor, which surrounds the service column. The drips fall into this and are drained into the adjoining pit, from which they escape to the sewer.

The locomotive house has three driving wheel drop pits, the central one of the three having an additional drop for removing cylinders. This central pit is ordinarily kept free at all times, so that the driving wheels from the locomotives on the outside drop pits, may be removed to the central pit, and run out to the shop.

In the machine shop, group drive has been substituted for central drive. Formerly, there was a central a. c. motor, driving two lines of shafting, one on each side of the shop. As this was overloaded, small auxiliary steam engines were added at three points in the shop. All this arrangement has been taken out, and each side of the shop made a separate unit, with two d.c. motors mounted on high concrete piers for each. Incidental to this change, the whole shop has been rewired to meet the government requirements, all the cables running through conduits.

The rusting of track bolts has been considerably reduced on one U.S. road by having the track walkers go over the line, about once a year, and daub the nuts with a low grade of lubricating oil, this being done on one of their regular track inspection trips. The necessity of splitting the nuts with a chisel, when removing a rail, has thus been greatly minimized.



Shackle Bar for Withdrawing Bolts from Timber.

Orders by Board of Railway Commissioners.

[illegible] have filed the paper have a continuous record [illegible] thi[illegible]

The dates given of orders, immediately following the numbers, are those on which the hearings took place, and not those on which the orders were issued. In many cases orders are not [illegible]

18862. Mar. 7.—Ordering that, unless it withdraws that portion of its location plan affecting lots 21 to 30, block 175, Regina, Sask., within 20 days from date, Canadian Northern Ry. shall forthwith take necessary steps to acquire said lots.

18863. Mar. 11.—Authorizing Bell Telephone Co. to erect poles and wires on and across 23 [illegible] across May and Ridgway Sts., Fort William, Ont.

18865. Mar. 15.—Approving location of C.P.R. [illegible]

18866. Mar. 14.—Extending, for six months from date, the time within which Esquimalt and Nanaimo Ry. was required to file standard tariff of maximum freight tolls.

18867. Mar. 14.—Authorizing C.N. Alberta [illegible]

18868. Mar. 15.—Approving location of C.N. Ontario Ry. station grounds at Nosbonsing, mileage 216.2 from Ottawa.

18869. Mar. 14.—Approving Alberta Central [illegible]

18870. Feb. 18.—Ordering Vancouver, Victoria and Eastern Ry. and Navigation Co. to include in its summer timetable a suburban service between Vancouver, B.C., and Bellingham, Wash., from June 15 to Oct. 15 each year until further order.

18871. Mar. 13.—Authorizing C.P.R. to build its Forsyth Branch overhead across Moreau, Forsyth, Prefontaine, Dezery, St. Germain, Darling, Davidson, Cuvellier, Aylwin, Joliette, Chambly, Nicolet and Valois Sts., and to revise grade at Forsyth, Davidson and St. Germain Sts., Montreal.

18872. Mar. 15.—Ordering C.P.R. to install, within 90 days, an improved type of illuminated electric bell at highway at Glen Major flag station, 20% of cost to be paid out of the railway [illegible]

18873. Mar. 15.—Approving location of C.P.R. [illegible] C.P.R. siding tracks in track shed at its elevator in North Transcona Yard, Man., provided men are kept off tops and sides of cars while passing through.

18875. Mar. 17.—Authorizing C.P.R. to build additional track across highway at mileage 58.0 from North Bend, Cascade Subdivision, B.C.

18876. Mar. 17.—Amending order 18698, Feb. 12, re installation of gates at Bartlett Ave., Toronto.

18877. Mar. 17.—Certifying correction in Canadian Northern Ry. location plan from Slate River westerly, mileage 12.2 to 23.2, Thunder Bay District, Ont.

18878. Mar. 17.—Authorizing Canadian Northern Ry. to build across public road between Secs. [illegible] Lake Ontario and Western Ry. (C.P.R.) to build bridge 33.2 over Fourth Depot Lake, Hichinbrooke Tp., near Parham, Ont., and rescinding [illegible]

18880. Mar. 18.—Approving National Trans[illegible] locking plant to be installed near Theriault Station, N.B.

18881. Mar. 18.—Authorizing C.P.R. to build [illegible] C.N.R. Prince Albert Branch, near Kenaston, [illegible] ecs. 18 and 7-10-14, w. 4 m., [illegible] allowance between [illegible] Con. 1, and Lot 22, B.F. Con., Darlington Tp., [illegible]

18886. Mar. 18.—Ordering Bell Telephone Co. [illegible] Ont.

18887. Mar. 17.—Ordering G.T.R. to install within 90 days improved type of illuminated electric bell at crossing of Main St., Thorndale; train movements on siding to be protected by flagman.

18888, 18889. Mar. 19.—Ordering G.T.R. to install improved type of automatic electric bells at Clara St., near Glen Robertson Station, Ont., and at first highway 150 ft. west of St. Hilaire Station, Que.

18890. Mar. 17.—Authorizing G.T. Pacific Branch Lines Co., subject to conditions of agreement, to build its Regina-Moose Jaw Branch over Main St., Moose Jaw, Sask., by temporary structure with one 20 ft. and two 15 ft. openings.

18891. Mar. 19.—Authorizing Bay of Quinte Ry. to revise grade across public road between Lot 49, Con. 1, Camden Tp., and Lot 16, Con. 3, Portland Tp., Ont.

18892. Mar. 18.—Authorizing C.N. Ontario [illegible] Burton Tp., for traffic in timber, logs being floated down Magarvatawan River and stored prior to being loaded on cars.

18893. Mar. 19.—Ordering G.T.R. to install [illegible] Gravel Toll Road, Sarnia Tp., Ont.

18894, 18895. Mar. 20.—Reporting to Governor in Council for approval, Hamilton Radial Ry. and [illegible] amending Sec. 1, of bylaw recommended by [illegible]

18896. Mar. 19.—Authorizing Toronto and Niagara Power Co. to erect wires across C.P.R. telegraph wires and across T.H. & B.R., in Lot 15, Con. 3, Saltfleet Tp., Ont.

18897 to 18899. Mar. 20, 19.—Approving proposed layout of C.N. Ontario Ry. station grounds at Davis, mileage 289.8; location of station at Janes, mileage 281.6; and proposed layout of station grounds at Spaidal, mileage 298.36 from Ottawa.

18900. Mar. 20.—Approving location of Canadian Northern Ry. station at Ceylon, Sask.

18901. Mar. 10.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to build at grade across Anderson St., Whitby, mileage [illegible]

18902. Mar. 20.—Approving location of G.T. Pacific Ry. station at Prince George, mileage 467.3 from Prince Rupert East, B.C.

18903. Mar. 19.—Authorizing G.T.R. to operate siding, authorized by order 14821, Sept. 19, [illegible] and Co.'s bark mill shed at Acton, Ont., with a clearance of about 16 ft. between top of rails and [illegible]

18904. Mar. 20.—Authorizing R. and E. Kelly, F. Nash and F. Williams, of Namao, Alta, to excavate, subject to certain conditions, coal under Edmonton, Dunvegan and British Columbia Ry. right of way, on Sec. 8-55-21, w. 4 m.

18905. Mar. 22.—Recommending to Governor in Council for sanction, Hamilton Radial Ry. bylaw of Feb. 24, adopting book of operating rules.

18906. Mar. 14.—Authorizing G.T.R. to take certain lands in Hamilton, Ont., for carrying out provisions of order 16671, June 1, 1912, re shunting on Ferguson Ave.

18907. Mar. 22.—Recommending to Governor in Council for sanction Brantford and Hamilton Ry. bylaw of Feb. 24, adopting book of operating rules.

18908. Mar. 20.—Amending order 17869, Oct. 24, 1912, to provide for building of spur from C.P.R. main line east of Neebing Ave., Fort William, Ont., to 100 ft. south of C.N.R., to cross C.N.R. on Neebing Ave. at grade.

18909, 18910. Extending to Apr. 7 effective date of schedules to give effect to order 18771, Feb. 19, re C.P.R., C.N.R. and G.T.P. Ry. special joint tariffs on lumber and other commodities carried at lumber rates from west of and including Blairmore and Laggan, Alta., to Winnipeg; and extending to same date effective date of reduced rates on similar traffic from same points to east of Red River, as provided in order 18738, Feb. 19.

18911. Mar. 25.—Approving location of G.T. Pacific Ry. stations at Irmie, mileage 864.9, and Keston, mileage 875.1, North Alberta District.

18912. Mar. 25.—Authorizing G.T.R. to build extension to siding to premises of A. Bremner, Ltd., Lot 3413, St. Henri Ward, Montreal, to make changes in its location, and to alter and extend its Lachine Canal Branch, serving Dominion Textile Co.

[illegible] 1912, between Canadian Northern Ry., Midland Ry. of Manitoba, G.T. Pacific Ry., the Minister of Railways and Canals, and National Transcontinental Ry., providing for operating M.R. of M. trains over the other lines mentioned, at Winni[illegible]

18914. Mar. 25.—Relieving C.P.R. from providing further protection at crossing between Lots 5 and 6, Con. 3, near Tillsonburg, Ont.

[illegible] Mar. [illegible]—Approving location of C.P.R. stations at Kelfield, Broadacres, Vanguard, Neville and Cloan, Sask.

18916. Mar. 26.—Amending order 18881, Mar. [illegible] C.P.R. additional track at mileage [illegible] Cascade Subdivision, B.C.

[illegible] Mar. [illegible]—Authorizing Canadian Northern Ry. to build under C.P.R. Outlook Branch, [illegible] Sask.

18918. Mar. 25.—Authorizing Campbellford, Lake Ontario and Western Ry. to build between Lots 5 and 6, Con. 3, Bathurst Tp., mileage 5.22 from Glen Tay, Ont.

18919. Mar. 22.—Ordering G.T.R. to renew rails between mileage 22 and 26; pending completion, all trains between Trout Creek and Powassan to be limited to a speed not exceeding 15 miles an hour.

[illegible] Mar. [illegible]—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to build across Division, Ontario and Prince Edward Sts., Brighton, Ont.

18921. Mar. 26.—Authorizing C.P.R. to re[illegible] Papineau Ave., Montreal.

18922. Mar. 25.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to build between Lots 4 and 5, Con. 1, Brighton, at mileage 98.12 from Glen Tay, Ont.

[illegible] Mar. [illegible] 6, re taking of certain lands in Camden Tp., Ont., [illegible] Lake Ontario and Western Ry. (C.P.R.)

18924, 18925. Mar. 27.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to take certain lands for diversion of highway be[illegible] B.F. Con., Darlington Tp., rescinding order 18444, Jan. 3, in same connection, [illegible] to build its ballast pit spur under C.N. Ontario Ry. in easterly half of Lot [illegible]

18926. Mar. 27.—Approving Hull Electric Ry. bylaw of Mar. 12, authorizing G. G. Gale, General Superintendent, to issue tariffs of tolls for its freight and passenger traffic.

18927. Mar. 27.—Authorizing Alberta Public Works Department to build road allowance across C.P.R. between n.w. ¼ Sec. 7-24-25, and n.e. Sec. [illegible], w. 4 m.

18928. Mar. 27.—Ordering Campbellford, Lake Ontario and Western Ry. (C.P.R.) to fill in highways between Lots 10, 11, and Lots 20, 21, B.F. Con., Clarke Tp., between its tracks and G.T.R., from north of G.T.R. right of way, for a width of 40 ft., and build substantial guard rails on each side, question of contribution to cost by G.T.R. reserved for further consideration.

18929. Mar. 27.—Further extending time to May [illegible], within which C.P.R. may operate over crossing with Hull Electric Ry.

18930. Mar. 27.—Authorizing C.N. Ontario Ry. to build its Ottawa to North Toronto Line, as revised, across its Sudbury Branch at mileage 8.42 from Union Station, Toronto.

18931. Ordering C.N. Quebec Ry. within 15 days to file with Board plan showing location of temporary passenger station and freight shed facilities at Maisonneuve; and within 30 days to file plans of passenger and freight station proposed to be built there; work to be completed within 90 days after approval of plans.

18932. Mar. 28.—Approving clearances as shown on plan of American Cyanamid Co.'s skip hoist over Michigan Central Rd. at Niagara Falls, Ont., provided men are kept off tops of cars operated under same.

18933. Mar. 28.—Authorizing Canadian Northern Ry. to build its Craven Northeasterly Branch under public road between Secs. 19 and 20, Tp. [illegible]

18934. Mar. 28.—Extending to May 1 time within which G.T.R. shall build two sidings for A. S. Nicholson at Burlington, Ont.

18935. Mar. 31.—Authorizing G.T. Pacific Ry. to build bridge across Willow River at mileage 1262 west of Winnipeg, Fort George District, B.C.

[illegible] Mar. [illegible]—Directing G.T.R. [illegible] Plains Road, just west of Burlington Jct., Ont.; and ordering that it be built in accordance with plan prepared by Board's Chief Engineer, on file under no. 9437.765, and marked A, apportioning [illegible]

[illegible] Campbellford, Lake Ontario and Western Ry. (C.P.R.) to build a bridge at mileage 148.46, across Liberty St., Bowmanville, Ont.

18938. Mar. 28.—Authorizing clearances as shown on plan of spur for Skinner and Miquelon, Calgary, Alta.

18939. Mar. 28.—Authorizing St. Thomas Parish, Que., to build highway crossings over C.P.R., on Lots 117 and 118, North Jersey, St. Alexis and Lac Romer concessions, Lanoraie Parish, and Coteau Jaune concession.

18940. Mar. 28.—Authorizing City of Saskatoon, Sask., to carry Taylor St. across Canadian Northern Ry. at rail level.

18941. Apr. 1.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to connect with G.T.R. at mileage 93.2 from Glen Tay, Ont.

18942. Apr. 1.—Authorizing G.T.R. to use bridge 271 over Lachine Canal, Montreal.

18943. Apr. 1.—Approving location of 14 G.T. Pacific Ry. stations in British Columbia.

18944. Apr. 1.—Dismissing Montreal Board of Trade's application for order requiring flannelette sheets to be added to Dry Goods List of Canadian Freight Classification at same ratings as provided for cotton piece goods.

18945. Apr. 1.—Extending to May 31 time within which C.P.R. shall complete spur for Calgary Terra-Cotta Co., near Calgary, Alta.

18946. Mar. 20.—Ordering Calgary and Edmonton Ry. to build spur for Saskatchewan Land and Homesteading Co. in Sec. 21-39-27, w. 4 m., Alta.

18947. Mar. 20.—Authorizing Montreal and Atlantic Ry. to build spur for Walsh Plate and Structural Works across St. George St.; road to St. Germain and land adjacent, Drummondville, Que.

18948. Mar. 31.—Approving C.P.R. plans showing general layout of subway at Victoria Rd., Calgary, Alta.; showing general design of superstructure; and stress sheets of superstructure.

18949. Mar. 31.—Authorizing Canadian Northern Ry. to build across C.P.R. irrigation ditch in Secs. 3 and 4-24-28, w. 4 m.; and rescinding orders 11590 and 18385, Sept. 6, 1910, and Sept. 30, 1912.

18950. Mar. 29.—Authorizing C.N. Alberta Ry. to build spur through Secs. 29, 20, 19, 18, 7 and 6, Tp. 54-1, w. 5 m., Alta., to Huff's gravel pit.

18951. Apr. 2.—Authorizing C.N. Ontario Ry. to divert Bush Road, Fraser Tp., Co. Renfrew, Ont., station 2221+97, and to build across same overhead.

18952. Apr. 1.—Authorizing C.N. Ontario Ry. to build bridge over Beaver River, West Branch, Algoma District, at mileage 211.3 from Sudbury Jct.; and rescinding order 18598, Jan. 29, 1913, in so far as it authorizes this construction.

18953. Mar. 29.—Authorizing C.P.R. to build two spurs for Dominion Bridge Co., in Toronto.

18954. Mar. 31.—Authorizing C.P.R. to build its main line at grade across Calgary, Montana, Bonanza and Orient Sts., and Government Road to Fort Steel, Golden townsite, B.C.

18955, 18956. Mar. 29, 28.—Authorizing C.P.R. to build spurs for City of Winnipeg, and also spur for W. Hodge and H. Rorison, Moose Jaw, Sask.

18957. Mar. 29.—Authorizing C.P.R. to build bridge 100.5 over St. John River, at Perth, N.B.

18958. Apr. 1.—Ordering C.P.R. to divert Nine Mile Road along east side of its line to a connection with road between North Gower and South Gower Tps., Ont.

18959. Mar. 29.—Authorizing G.T.R. to build siding for Northern Aluminum Co., Toronto.

18960. Mar. 31.—Authorizing G.T.R. to build additional track across Factory St., Windsor Mills, Que., for Canada Paper Co., Ltd.

18961. Amending order 18903, Mar. 19, re operation of G.T.R. siding through Beardmore and Co.'s shed at Acton, Ont.

18962. Mar. 31.—Authorizing G.T.R. to build siding for Standard Bedstead Co., and Victoriaville Chair Co., on Lot 11, r. 3, Arthabaska Tp., Que.

18963. Apr. 2.—Approving G.T. Pacific Ry. plan showing pile abutments for bridge to be built across opening to be made in fill at Cameron Bay, near Prince Rupert, B.C., by order 15735, Jan. 2, 1912, in substitution for concrete abutments approved by order 18724, Feb. 17, 1913; and rescinding latter order, in so far as it approves the concrete abutments.

18964. Apr. 2.—Authorizing G.T. Pacific Ry. to build spur from its Melville-Regina Branch for Crystal Ice Co. in s.e. ¼ Sec. 9-21-13, Assiniboia District, Sask.

18965. Mar. 29.—Authorizing Montreal and Southern Counties Ry. to build across 18 highways in Greenfield Park, Que.

18966. Apr. 2.—Approving G.T.R. plans showing proposed interchange track with C.P.R. at Orillia, Ont.

18967. Mar. 31.—Authorizing C.P.R. to build spur for Medicine Hat Brick Co., Medicine Hat, Alta.; and rescinding order 17714, Oct. 11, 1912, relating to spur for Purmal Brick Co., Medicine Hat, Alta.

18968. Apr. 2.—Amending order 18816, re change in location of C.P.R. station at Kelloe, Man.

18969. Apr. 2.—Authorizing C.P.R. to build road diversion in Bethany, Ont., as shown on plan under file 2100.115.

18970. Apr. 1.—Amending order 16380, Apr. 24, 1912, by deleting therefrom authorization for location of proposed spur and freight tracks through Lots 21 to 30, Block 175, Regina, Sask.

18971. April 3.—Approving proposed location of G.T. Pacific Ry. station at Moricetown, mileage 204.6, east from Prince Rupert, B.C.

18972. Apr. 3.—Authorizing C.P.R. to open for traffic road crossing between Secs. 18 and 7, Tp. 9-25, and road diversion in Sec. 18-9-25, w. 4 m.; and to close up existing crossing of diverted highway between Secs. 17 and 18-9-25, w. 4 m., Alta.

18973. Apr. 3.—Extending for one month from date time within which Edmonton Interurban Ry. shall file detail plans, showing protective appliances to be installed at crossing of Edmonton, Dunvegan and British Columbia Ry., in n.w. ¼ Sec. 25-53-25, w. 4 m., Alta.

18974. Apr. 2.—Authorizing Montreal and Atlantic Ry. (C.P.R.) to build interchange track with Intercolonial Ry. in Lot 131, St. Rosalie Parish, Que.

18975. Mar. 29.—Approving revised location Toronto and Niagara Power Co.'s second transmission line from Jane St. to Islington, Ont., mileage 4.64 to mileage 7.27.

18976. Apr. 3.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to build across G.T.R. by a bridge at mileage 121.02, Hamilton, Tp., Ont.

18977. Apr. 3.—Approving location of C.P.R. stations at Consort, Fleet and Monitor, Alta.

18978. Apr. 8.—Authorizing Page Hersey Iron Tube and Lead Co. to build crane runway over C.P.R. siding at Guelph, Ont.

18979. Apr. 7.—Certifying correction of Campbellford, Lake Ontario and Western Ry. (C.P.R.) location plan, to include land for right of way across Mill Pond, Oshawa, Ont., at mileage 159.25 from Glen Tay.

18980. Apr. 4.—Ordering C.P.R. to make such arrangements at Strathcona station, Alta., as will enable Twin City Transfer Co., Edmonton, Alta., to transfer baggage or passengers.

18981. Apr. 4.—Authorizing C.P.R. to build spurs for Dominion Bridge Co. at Winnipeg.

18982. Apr. 7.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to cross G.T.R. by a bridge in Port Hope, Ont.

18983. Apr. 5.—Approving clearance of 3½ ft. for canopy on Bishopric Wallboard Co.'s building from C.P.R. track at Ottawa.

18984. Apr. 8.—Approving revised location C.P.R. Wilkie-Anglia Branch from Sec. 13-34-19, mileage 37.44, to Sec. 9-34-18, mileage 40.66, and from Sec. 9-34-18, mileage 40.66, and from Sec. 9-34-18, mileage 40.66 to Sec. 17-30-16, w. 3 m., mileage 77.28; and authorizing the crossing of 38 highways, and diversion of certain of them.

18985. Apr. 7.—Authorizing Canadian Northern Ry. to build its Delisle Branch across 5 highways in Saskatchewan.

18986. Apr. 2.—Authorizing Canadian Northern Ry. to build spur for Imperial Oil Co., Prince Albert, Sask.

18987. Apr. 7.—Ordering Canadian Northern Ry., until earnings at Englefield station reach requirements of flag station order, to appoint a caretaker there to keep waiting room clean and heated, to meet local wayfreight trains, and to see that freight of same is stored in freight shed under lock and key.

18988. Apr. 3.—Ordering that Canadian Northern Ry. make grade diversion in Sec. 2, and build crossing between Secs. 1 and 2, Tp. 11-32, w.p.m.; and build 8 highways in accordance with the Board's Standard Regulations Affecting Highway Crossings, as amended May 4, 1910; and build a crossing on road allowance between Secs. 19-11-32 and 24-11-33, w.p.m. to complete the work by July 31.

18989. Apr. 5.—Approving revised location of G.T. Pacific Ry., Moose Jaw Northwest Branch between Secs. 19-22-7 and 13-22-8, w. 3 m., mileage 74.5 to 75.6, Moose Jaw District, Sask.

18990. Apr. 7.—Authorizing G.T. Pacific Ry. to carry traffic over its main line east of Prince Rupert, B.C., between New Hazelton and Beament, mileage 181 to 195.

18991. Apr. 5.—Authorizing B.C. Electric Ry. to connect with Vancouver and Lulu Island Ry. near Fourteenth St., New Westminster, by interchange track.

18992. Apr. 2.—Authorizing R. H. Edgar, Bowling Green, Ont., to erect telephone wires across C.P.R. wires and track in Lot 2, Con. 3, Amaranth Tp., Ont.

18993. Apr. 2.—Approving location C.P.R. station at Veteran, Alta.

18994. Apr. 1.—Approving C.N. Alberta Ry. crossing between Secs. 9 and 10-54-26, w. 4 m.; and authorizing it to divert road about 60 ft. west of road allowance, so as to carry it under west end of trestle over Sturgeon River; and approving crossing between Secs. 9 and 16-54-26, w. 4 m., known as Lake Ste. Anne Trail, work to be completed by June 30.

18995. Apr. 7.—Authorizing C.N. Ontario Ry. to build across Toronto Belt Line Ry. at West Toronto, Ont.

18996. Apr. 7.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to take lands for station grounds in Trenton, Ont.

18997, 18998. Apr. 8, 5.—Authorizing C.P.R. to build spurs at mileage 41.0 from Crowsnest, B.C., and for Dominion Bridge Co. at Islington, Ont.

18999. Apr. 5.—Approving location of joint station for C.P.R. and Kettle Valley Ry. on site of present K.V.R. station at Grand Forks, B.C.

19000. Apr. 7.—Authorizing C.N. Branch Lines Co. to build its Sturgis-Hudson Bay Jct. Line across 3 highways in Saskatchewan.

19001. Apr. 7.—Approving C.N. Branch Lines Co.'s location through Tps. 34-37, r. 4-5, w. 2 m., mileage 0 to 21.09, Sask.

19002. Apr. 8.—Authorizing G.T.R. to build siding for Price, Cumming Brick Co., on Lot 19, r. D, Etobicoke Tp., Ont.

19003. Apr. 7.—Authorizing G.T.P. Branch Lines Co. to build bridge across C.P.R. irrigation canal at mileage 180.6 on its Tofield-Calgary Branch, Alta.

[illegible] Authorizing Montreal and Southern Counties Ry. to cross G.T.R. in St. [illegible] from Montreal.

19005. Apr. 9.—Approving alteration in Campbellford, Lake Ontario and Western Ry. (C.P.R.) location to include extra lands for station grounds in Trenton, Ont., and approving station building.

19006. Apr. 9.—Approving Canadian Northern Ry. Standard Freight Mileage Tariff C.R.C. no. E. 212 for its lines east of Port Arthur, Ont.

19007. Mar. 15.—Authorizing C.P.R. to construct sidings to premises of H. B. Harrison, Owen Sound, Ont.

19008. Apr. 2.—Authorizing C.P.R. to open for traffic its second track between Mortlach and Parkbeg, Sask., 8.4 miles.

19009. Apr. 9.—Authorizing C.P.R. to build extension to spur for Prairie City Oil Co., Winnipeg.

19010. Apr. 8.—Approving location of twelve G.T. Pacific Ry. stations in British Columbia.

19011. Apr. 9.—Ordering Canadian Northern Ry. strictly to comply with Sec. 297 of the Railway Act, and to keep certain portions of its right of way free from dead or dry grass, or other unnecessary combustible matter; work to be completed in some sections in Alberta and Saskatchewan not later than May 1, and in other sections in northern Saskatchewan and Manitoba not later than June 15; company liable to a penalty of $100 a day for default.

19012. Apr. 9.—Amending order 18717, Feb. 17, re building of C.P.R. spur for McAuliffe Davis Lumber Co., Gloucester Tp., Ont.

19013. Apr. 9.—Authorizing G.T.R. to build bridge between Cons. 5 and 6, Esquesing Tp., west of Limehouse, Ont.

19014. Apr. 9.—Authorizing G.T.R. to build spur for Telfer Bros., Toronto.

General order 103. Apr. 9.—Amending order 17211, July 24, 1912, approving certain regulations governing testing of hearing and eyesight of railway employes.

19015. Apr. 10.—Extending to May 1 time allowed under order 15703, Dec. 27, 1911, for building of Canadian Northern Ry. spur for Saskatoon Brick and Supply Co., Saskatoon, Sask.

19016. Apr. 10.—Approving revised location of C.N. Ontario Ry. Toronto-Ottawa line, mileage 4.65 to 5.27 from Yonge St., Toronto, and authorizing building of branch and Y's, mileage 0 to 1.48.

19017. Apr. 7.—Approving Niagara, St. Catharines and Toronto Ry. revised location through Niagara Tp., mileage 8.7 to 11.1; and authorizing crossing of Creek and Blackswamp Roads.

19018. Apr. 11.—Approving Canadian Northern Ry. location through Tps. 24-22, r. 4-2, w. 3 m., mileage 80.09 to 99.72, Sask.

19019. Apr. 8.—Authorizing Canadian Northern Ry. to extend foot bridge over its tracks at West Fort William, Ont., and rescinding order 13888, June 9, 1911, in same connection.

19020. Apr. 9.—Amending order 17606, Sept. 25, 1912, re building of bridge by C.N. Ontario Ry. at Forresters' Creek, Ross Tp.

19021. Apr. 9.—Approving C.N. Ontario Ry. revised location through York and Scarboro Tps., mileage 4.35 to 7.21 from Yonge St.

19022. Apr. 3.—Approving location of C.N. Ontario Ry. station grounds at Beachburg, and rescinding order 18468, Nov. 27, 1912.

19023. Apr. 11.—Ordering Canadian Northern Ry. to grade highway diversion between Secs. 23 and 26, Tp. 9, r. 32, w.p.m., and to build 7 highway crossings in Tp. 9, r. 32 and 33.

19024 to 19026. Apr. 12, 10.—Authorizing C.P.R. to build highways across its line at Herschel, Willows and Leipzic, Sask.

19027. Apr. 11.—Amending order 18911, March 25, re location of G.T. Pacific Ry. station Irmie, Sask., to read Imrie, Sask.

19028. Apr. 10.—Approving G.T. Pacific Branch Lines Co.'s site at Huxley, Alta.

19029. Apr. 11.—Relieving Bedlington and Nelson Ry. from erecting fences along its right of way between International Boundary and mileage 29.5; at bridges and trestles between mileage 29.5 and 37.5; and between Sirdar Jct. and Kuskonook, B.C., until these portions become settled or improved.

19030. Apr. 12.—Authorizing C.P.R. to build certain spurs across Eighth, McNeely and Columbia Streets, New Westminster, B.C.

19031. Apr. 12.—Approving Kettle Valley Ry. plan of standard trestle.

19032. Apr. 10.—Relieving Canadian Northern Ry. from publication of notice of proposed application for approval of amalgamation agreement with Winnipeg and Northern Ry.

19033. Apr. 11.—Ordering that highway be carried over G.T.R., at point of crossing, between Lots 8 and 9, Con. 1, Murray Tp., Ont., by a bridge; 50% of cost to be paid by Campbellford, Lake Ontario and Western Ry. (C.P.R.), and balance by G.T.R., less 20% of cost of single span over G.T.R. only, to be paid out of the railway grade crossing fund; work to be completed by Dec. 31.

19034. Apr. 11.—Authorizing G.T.R. to build siding for Quincy Adams Lumber Co., Morrison Tp., Ont.

19035. Apr. 12.—Approving C.N. Ontario Ry. location, through Nelson and East Flamboro

Tp., mileage 31.54 to 38.54; and rescinding order [illegible], Oct. 18, 1912.

[illegible] Apr. [illegible]—Approving Toronto Suburban Ry. plans of proposed undercrossing of C.P.R. at Mimico River, Etobicoke Tp., Ont.

[illegible] Apr. [illegible]—Amending order [illegible], Jan. 24, re highway crossing on C.P.R. Swift Current Northwesterly Branch.

19038. Apr. 12.—Amending order 18908, Mar. 20, re C.P.R. spur at Neebing Ave., Fort William, Ont.

19039. Apr. 14.—Approving revised location of [illegible] Campbellford, Lake Ontario and Western Ry. (C.P.R.) from Division St., Cobourg, [illegible] mileage [illegible] from Glen Tay, to Lot 25, Con. [illegible], Hamilton Tp., mileage [illegible].

19040. Apr. 14.—Authorizing C.P.R. to build bridge 47.8 over Ruby Creek, Cascade Subdivision, B.C.

[illegible] Apr. [illegible]—Authorizing C.P.R. to build highway across its line in part of Sec. 21-24-25, [illegible].

19042. Apr. 14.—Authorizing C.P.R. to build bridge [illegible] Cascade Subdivision, B.C.

[illegible] Apr. [illegible]—Authorizing Canadian Northern Ry. to build across 4 highways on its Craven Northeasterly Branch, Sask.

Authorizing Canadian Northern Ry. to build across 4 highways on its Craven Northeasterly Branch, Sask.

[illegible] Apr. [illegible]—Authorizing G.T.R. to build two sidings for Asbestos Manufacturing Co., [illegible], Que.

[illegible] to [illegible] Apr. [illegible]—Authorizing C.P.R. to build spurs for Matthew Laing, Limited, Fort William, Ont.; Imperial Oil Co., Stettler, Alta., and [illegible] siding spur in Lot Cadastral 1632, southwesterly of Bethune Ave., Westmount, Que.

[illegible] Apr. [illegible]—Authorizing C.P.R. to build two sidings for H. B. Harrison, Owen Sound, Ont., and rescinding order [illegible], Mar. [illegible].

19049. Apr. 14.—Authorizing Canadian Northern Ry. to change its location from near intersection of Dee St. and Logan Ave., Winnipeg, [illegible]; and to build across C.P.R.

19050. Apr. 15.—Extending for 30 days from date time within which Canadian Northern Ry. shall install electric bell at crossing of first highway east of Joliette, Que.

19051. Apr. 14.—Ordering C.P.R. to install gates at crossing of Centre St., Chatham, Ont.

19052. Apr. [illegible]—Approving location of G.T. Pacific Ry. Prince Rupert Westerly line, mileage 0 to 2.25, at Seal Cove, r. 5, Coast District, B.C.

19053. Apr. 10.—Approving location of C.P.R. [illegible] Branch from Sec. [illegible], mileage 0 to 115.49, and authorizing its building across 115 highways.

19054. Apr. 7.—Relieving G.T. Pacific Ry. from erecting fences from Junkins, 870 miles west of Winnipeg, to mileage 1073.5, and from Prince Rupert easterly to mileage 164, until land on either side becomes settled or improved.

19055. Apr. 15.—Approving G.T.R. plan of proposed connection and interchange track with C.P.R. at Orillia, Ont., each company to bear half cost of construction and maintenance, and rescinding order 18966, Apr. 2.

[illegible] Apr. [illegible]—Amending order [illegible], Mar. 18, re Campbellford, Lake Ontario and Western Ry. (C.P.R.) road crossing, etc., mileage 52.73 [illegible].

[illegible] Apr. [illegible]—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to build [illegible] Lots [illegible] and [illegible], Con. 1, Darlington Tp., mileage 151.52 from Glen Tay, Ont.

19058. Apr. 16.—Authorizing C.P.R. to build spur for Northwestern Brass Co., Calgary, Alta.

19059, 19060. Apr. 15, 14.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to build road diversion in Lot 16, Con. 1, Hope Tp., mileage 129.65 from Glen Tay; to build over same by a bridge and to close crossing of highway between Lots 16 and 17, and rescinding orders 17575 and 17953, Sept. 23 and Nov. 8, 1912; and to build across highway between Lots 8 and 9, Con. 1, Murray Tp., under bridge authorized by order 19033, Apr. 11, and rescinding order 18711, Feb. 13.

19061. Apr. 14.—Recommending for approval of Governor in Council, G.T.R. Signal Rules governing Transportation Department.

19062. Apr. 15.—Authorizing G.T.R. to build siding on and along Maitland Road, thence northwesterly for 300 or 400 ft.

19063. Apr. 16.—Amending order 19004, Apr. 7, re crossing of G.T.R. by Montreal and Southern Counties Ry., at mileage 7.45 from Montreal.

[illegible] C.N. Ontario Ry. to build bridge over Mink Creek, Pentland Tp., [illegible].

[illegible] Canadian Northern Ry. to build extension to spur for Shevlin Clarke Co., Fort Frances, Ont.

19066. Apr. 14.—Amending order 18943, Apr. 1, re location of certain G.T. Pacific Ry. stations [illegible].

19067. Apr. 15.—Ordering Michigan Central Rd. to move farm crossing in Lot 13, Con. 11, South Norwich Tp., Ont.

19068. Apr. 16.—Ordering that interlocking plant at crossing of Fredericton St. by Port Arthur and Fort William Electric Ry. be operated by day and night watchmen; as soon as gates are in operation, provisions of order 7601 are rescinded in so far as they provide for such operation by conductors of cars; and apportioning cost.

19069. Apr. 1.—Ordering that telegraph companies transmit and receive for delivery, both plain and code language Japanese telegrams, and providing certain conditions. The details of this order are given fully on another page, under Telegraph, Telephone and Cable Matters.

19070. Apr. 16.—Authorizing C.N. Ontario Ry. to build branch line across Toronto-Sudbury Branch and across Don River, at mileage 4.8 from Yonge St., Toronto.

19071. Apr. 16.—Authorizing East Kootenay Logging Ry. to build over British Columbia Southern Ry. by a bridge 1½ miles west of Jaffray station, B.C.

19072. Apr. 16.—Authorizing Winnipeg Electric Ry. to build extension along Arlington St. from William to Logan Ave., and across C.P.R. spur along Ross St.

19073. Apr. 16.—Authorizing G.T.R. to build siding and three spurs therefrom for Canadian Explosives, Ltd., Chambly West Parish, Que., to be completed within three months from date.

19074. Apr. 17.—Authorizing Canadian Northern Ry. to build diversion of its Oak Point Branch across 9 highways in Rosser, Man.

19075. Apr. 16.—Authorizing C.P.R. to build spur for Northern Electric and Mfg. Co. in Calgary, Alta., to be completed within three months from date.

19076. Mar. 26.—Ordering Campbellford, Lake Ontario and Western Ry. (C.P.R.) to install improved automatic electric bell at crossing between Lots 2 and 3, Con. 4, Scarboro Tp., Ont.

19077. Apr. 17.—Relieving C.P.R. from providing protection at crossing 350 yds. south of Crossfield station, Alta.

19078. Apr. 7.—Authorizing C.P.R. to build its Bergen Northeasterly Branch across 7 highways, mileage [illegible] to 5.88, Manitoba.

19079. Apr. 17.—Authorizing C.P.R. to divert portion of main line from Beavermouth, mileage 63.0 from Field, B.C., to mileage 89.0 at Ross Peak.

19080, 19081. Apr. 18.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to build across Division St., Cobourg, Ont., by a bridge, at mileage 119.76 from Glen Tay; to widen excavation on each side of subway, sod slopes, put in concrete sidewalks and leave roadway in good condition and well gravelled; and to build its ballast pit spur across 3 highways in Scarboro Tp.

19082. Apr. 18.—Authorizing C.P.R. to build spur for Seaman, Kent Co., Outremont, Que.

19083, 19084. Apr. 15, 17.—Authorizing C.N. Ontario Ry. to build bridge across Sturgeon River (middle crossing), Field Tp., mileage 257.6 from Ottawa; and to build its revised branch connecting its Toronto-Sudbury line with its Toronto-Ottawa line across C.P.R., near Donlands station, and rescinding order 18548, Jan. 17.

19085. Apr. 18.—Authorizing C.P.R. to build diversion of road allowance in Sec. 5-10-16, near Taber, Alta.

19086. Apr. 17.—Establishing express collection and delivery limits in St. John, N.B.; and ordering charge of extra toll for delivery of express freight in West St. John. This order is quoted fully on another page under Among the Express Companies.

19087. Apr. 16.—Approving Lake Erie and Northern Ry. location from station 0 at Lorne Bridge, Brantford, to station 1113+90, at Main St., Galt, Ont.

19088. Apr. 21.—Limiting publication of statutory advertisement of notice of application for approval of amalgamation agreement between Canadian Northern Ry. and C.N. Branch Lines Co.

19089. Apr. 21.—Approving location of C.N. Ontario Ry. station grounds at Dana, mileage 275.8 from Ottawa.

19090. Apr. 18.—Authorizing C.P.R. to take for its Windsor St. station and terminals and for rearrangement of tracks leading thereto certain lands in St. Andrew Ward, Montreal, and ordering it to extend a certain foot passage connecting it with remainder of Lot 1637 by stairway.

19091. Apr. 10.—Authorizing C.P.R. to cross Portland St., St. John, N.B., with spur for J. W. McCready & Son.

[illegible] Apr. [illegible]—Approving [illegible] location of C.P.R. temporary station on Hardisty Ave., Edmonton, Alta.

19093. Apr. 19.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to build across 5 highways in Cobourg, Ont.

19094. Apr. 21.—Approving location of G.T. Pacific Ry. station at Geikie, Alta.

[illegible] Apr. [illegible]—Authorizing Bay of Quinte Ry. to build spur for Canadian Sulphur-Ore Co., Elzevir and Madoc Tps., Ont.

[illegible] Apr. [illegible]—Authorizing Niagara, St. Catharines and Toronto Ry. to build siding for Port Dalhousie Canning Co., and approving revised location of its line between points A and B in Louth Tp. and Port Dalhousie, Ont.

Birthdays of Transportation Men in May.

Many happy returns of the day to:—

W. R. Baker, Secretary, and Assistant to President, C.P.R., Montreal, born at York, Eng., May 25, 1852.

G. S. Cantlie, General Superintendent Car Service, C.P.R., Montreal, born there May 2, 1867.

M. Donaldson, M. Can. Soc. C.E., Vice President and General Manager, Grand Trunk Pacific Ry., Winnipeg, born near Edinburgh, Scotland, May 1, 1851.

A. E. Duff, ex-District Passenger Agent, G.T.R., Toronto, now of Winnipeg, born at Sherbrooke, Que., May 1, 1872.

G. C. Dunn, District Engineer, G.T.P.R., Winnipeg, born at Quebec, May 13, 1862.

G. I. Evans, Superintendent, Angus Locomotive Shops, C.P.R., Montreal, born there, May, 1880.

M. A. Fullington, A.M. Can. Soc. C.E., Assistant Engineer, Eastern Division, C.P.R., Montreal, born at Johnson, Vt., May 12, 1880.

D. J. Hackett, Superintendent, Canada Division, Michigan Central Rd., St. Thomas, Ont., born in Cass County, Mich., May 1, 1868.

G. H. Hedge, Master Mechanic, Central Division, Canadian Northern Ry., Winnipeg, born at Neath, Wales, May 26, 1865.

T. Henry, Manager, Eastern Lines, Richelieu and Ontario Navigation Co., Montreal, born there, May 29, 1865.

B. R. Hepburn, M.P., President and General Manager, Ontario and Quebec Navigation Co., Ltd., Picton, Ont., born there, May 27, 1876.

G. A. Hoag, Superintendent, Central Ontario Ry., Trenton, Ont., born at Walker's Falls, Ont., May 31, 1866.

W. T. Huggan, Accountant and Auditor, Prince Edward Island Ry., Charlottetown, P.E.I., born at Halifax, N.S., May 24, 1851.

J. Irwin, Superintendent, District 3, Canadian Northern Ry., Dauphin, Man., born at Clinton, Ont., May 28, 1866.

H. B. Sherwood, Superintendent, Bay of Quinte Ry., Napanee, Ont., born at Auburn, N.Y., May 25, 1847.

W. Stapleton, District Passenger Agent, Canadian Northern Ry., Saskatoon, Sask., born at Bristol, Eng., May 20, 1884.

E. Tiffin, Member, Government Railways Managing Board and General Traffic Manager, Government Railways, Moncton, N.B., born at Hamilton, Ont., May 5, 1849.

J. H. Walsh, General Manager, Quebec Central Ry., Sherbrooke, Que., born at Quebec, May 12, 1860.

H. K. Wicksteed, B.A.Sc., M. Can. Soc. C. E., Chief Engineer of Surveys, Mackenzie, Mann & Co., Ltd., Toronto, born at Quebec, May 25, 1855.

James Yeo, ex-Roadmaster, Intercolonial Ry., Riviere du Loup, Que., born at Bideford, Devonshire, Eng., May 1, 1830.

Clerks Wanted by G.T.R.—The Railway Magazine, London, Eng., says: "We learn that owing to the rapidly extending lines of the Grand Trunk Ry. system, there are a limited number of vacancies for freight audit clerks in the offices of that company at Montreal. Experience in freight audit office or goods station experience is essential, but promotions are very rapid. Applications for positions should be addressed to F. C. Salter, European Traffic Manager, London."

The New Jersey legislature has passed a bill calling for the elimination of all grade crossings in that state at the entire expense of the railways. The railways are trying to have the act declared unconstitutional.

Railway Development

Projected Lines, Surveys, Construction, Betterments, Etc.

Algoma Central and Hudson Bay Ry.—We are officially advised in reference to reports that it was intended to proceed with the construction of dock and other terminal facilities at Sault Ste. Marie, Ont., at once, that there wil' be no further construction on terminal facilities this year. The only work that will be done will be the finishing up of the work practically completed last season, and which was described and illustrated in our Feb. issue. No definite decision has been reached as to the building of the proposed coal dock at Sault Ste. Marie. (April, pg. 168.)

Algoma Eastern Ry.—The Dominion Parliament has extended the time within which the line from Sudbury to Little Current, on Manitoulin Island, Ont., may be completed. (Jan., pg. 20.)

Athabaska Northern Ry.—The Dominion Parliament has extended the time within which the projected railway from Edmonton to Athabaska Landing may be built. (Dec., 1904, pg. 604.)

Atlantic, Quebec and Western Ry.—Quebec Oriental Ry.—The Minister of Railways stated in the House of Commons, Mar. 31, that the Government had under consideration a proposal to take over these lines and operate them as a branch of the Intercolonial Ry. The Q. and O. Ry., formerly known as the Atlantic and Lake Superior Ry., extends from Matapedia on the Intercolonial to New Carlisle, 100 miles, and the A.Q. and W. Ry., from the latter place to Gaspe Basin, Que., 104 miles. (Sept., pg. 450.)

Bruce Mines and Algoma Ry.—The Ontario Legislature has authorized the company to change the title to the Lake Huron and Northern Ontario Ry. Co. The existing line extends from the shore of Lake Huron through Bruce Mines for 17 miles to some copper mines at Rock Lake, but it has not been operated to any great extent. The company is given power to extend the existing line to a junction with the National Transcontinental Ry. between Cochrane and Hearst, and in connection with this project the company is authorized to purchase 1,000,000 acres of land along its route at 25c. an acre for 3,000 acres a mile of line built, and 50c. an acre for an additional 1,000 acres a mile of line built; the company agreeing to place on the lands 250 settlers a year for five years, and 500 settlers a year for a second five years; the investment of $3,500,000 on wood working plants within three years; and the provision of roads, bridges and schools for the territory opened up. (April, pg. 168.)

It is said that the organization of the new company which has taken hold of the B.M. and A. Ry. has not been completed, but that when it is, a contract for a section of the line will be let to M. J. O'Brien, of Renfrew. J. H. McCaul, of the O'Boyle Construction Co. is also interested in the project, and R. A. Lyon, Toronto, has been looking after the financing.

Calgary, Edmonton and Fort McMurray Ry.—The Dominion Parliament has incorporated a company with this title to build a line from Calgary to Edmonton, Fort McMurray, Alta., and other points in Alberta. (April, pg. 168.)

Canada and Gulf Terminal Ry.—Negotiations are said to be in progress for the construction of the extension of the line from the present terminus at Matane to Gaspe Basin, Que., 223 miles. The surveys being made are for a line having a maximum gradient of 0.6%. H. J. Lyons, Matane, Que., is Vice-President. (April, pg. 168.)

Canadian Western Ry.—The Dominion Parliament has incorporated a company with this title to build a railway to connect Winnipeg, Pas, Man.; Prince Albert, Battleford, Sask.; and Lethbridge, Man. (April, pg. 168.)

Cariboo, Barkerville and Willow River Ry.—An extension of time has been granted by the Dominion Parliament for the building of this projected railway. The act also authorizes the building of an extension from Barkerville to the junction of the Clearwater and North Thompson Rivers, and an additional branch to Bear River, B.C. (Dec., 1912, pg. 604.)

Central Ry. of Canada.—An action has been entered by C. J. Wills and Co., general contractors for the building of this railway, asking that the company be ordered to deposit in court $750,000 to guarantee the cost of building the line from Montreal to Midland, Ont. The contractors claim that they have already built 20 miles and done other work for which they claim $230,000. The company has filed a counter claim for $100,000, alleging that the contractors have failed to carry out their contract, with due diligence. (April, pg., 168.)

Clay Line Ry.—The Alberta Legislature has incorporated a company with this title to build a line from sec. 2, tp. 11, range 6 northerly to sec. 2, tp. 12, range 6, west of the 4th meridian, thence to Medicine Hat, and to operate the same by any motive power. The provisional directors are: H. O. Knowles, S. G. Bannan, L. Hunt, Medicine Hat, Alta.

Dominion North Western Ry.—The Dominion Parliament has incorporated a company with this title to build a railway from Regina, Sask., to Tuxford, on the C.P.R., thence to Red Deer, Alta., with a branch through Battleford, Sask., to Fort McKay. M. J. O'Connor, Ottawa, is interested in the project. (Dec., 1912, pg. 604.)

Edmonton, Dunvegan and British Columbia Ry.—Track is reported to have been laid to 75 miles northwest of Edmonton, Alta., and it is expected that tracklaying will be completed to the Athabasca River, 120 miles, during the summer. Ballasting will be started at once, a steam shovel being put in at Irish Creek, 65 miles from Edmonton. Supplies are being sent in for the construction gangs. The right of way has been cleared to 25 miles beyond the Athabasca River, and the line has been located to beyond Lesser Slave Lake. Contracts will shortly be let, it is reported, for the grading and masonry work westerly of the Athabasca River. J. D. McArthur, Winnipeg, is President, and A. C. Galbraith, Edmonton, is General Superintendent of Construction. (April, pg. 168.)

Esquimalt and Nanaimo Ry.—We are officially advised that a contract has been let to E. R. Doe and Brother, Victoria, B.C., for the erection of a 10 stall locomotive house, a machine shop 120 by 60 ft., a boiler house and store on the Songhees reserve, Victoria. The work is to be completed by Aug. 31. (April, pg. 168.)

Fredericton and Grand Lake Coal and Ry. Co.—We are officially advised that very little in the way of construction has been done on the line in Dec., 1912. The masonry for the bridge over Nashwaak River has been completed and the steel superstructure is completed. The substructure for the bridge over the Noornan Brook is finished and the steel superstructure is to be put in place immediately. The work of completing the line is now being gone on with, and it is expected to have it opened from near Fredericton to Minto by Aug. 31. The contract for grading, bridging, tracklaying and ballasting the Marysville branch has been let to A. E. Trites and Sons. It will be 2.84 miles long, leaving the main line about half a mile from Gibson. The work is to be completed by Aug. 31. H. W. D. Armstrong, Fredericton, N.B., is Chief Engineer. (April, pg. 168.)

Glengarry and Stormont Ry.—Application is being made to the Dominion Parliament for the incorporation of a company with this title to build a railway from Polycarp station, Ont., on the C.P.R., southwesterly through Williamstown to Cornwall, Ont. Pringle, Thompson and Burgess, Ottawa, are solicitors for applicants. (Aug., 1912, pg. 411.)

Huron and Ontario Ry.—The Dominion Parliament has authorized the company to change its name to that of the Toronto and North Western Ry., and has given an extension of time for the building of the projected railway. T. H. Kilgore, Toronto, is Secretary. (Dec., 1912, pg. 604.)

Intercolonial Ry.—The Sydney, N.S. Board of Trade has asked the Minister of Railways to take up the question of providing suitable railway and dock terminal facilities at that port.

The Maritime Board of Trade sent a deputation to Ottawa recently to urge the Minister of Railways to take up the question of locating a new route for the Intercolonial Ry. between Amherst and Truro, N.S. The purpose of the new route is to avoid the heavy gradients over the Cobequid Mountains. M. Lodge, President of the Board, on returning to Halifax, Mar. 31, stated that in all probability another survey would shortly be made. Previous surveys had shown that in order to obtain a line with a gradient of 0.4 to 0.6% between Amherst and Truro, the distance would be increased by 13 miles.

Tenders are under consideration for the building of a spur line of 1.50 miles from Pugwash, on the Oxford Branch, to Pugwash Harbor, N.S. (Feb., pg. 83.)

Kettle Valley Lines.—The Dominion Parliament has authorized the company to enter into agreement with the C.P.R.; has extended the time for the building of authorized lines, and has given power to build the additional lines described in Dec., 1912, pg. 605.

It is reported that a 50 mile stretch of line west of Carmi, B.C., has been handed over to the operating department, and that a regular train service will be established at an early date. A further section of the line is expected to be completed during the summer. The route of the line between Osprey Lake and Penticton has not been finally steeled, but Chief Engineer McCulloch says that this will shortly be decided on, and that the entire line from Grand Forks to the Fraser River will be completed by the end of 1914.

In connection with the Spokane and Republic Ry., which is the section of the line in the United States, the difference with the Great Northern Ry., as to the route of the line in the San Poil Valley, for the extension from Republic to Spokane, Wash., which has been a matter for litigation during the past few years, has been settled, by the G.N. Ry. withdrawing all claims to the route. (April, pg. 169.)

Lake Erie and Northern Ry.—The location plans for this projected railway from Port Dover on Lake Erie to Brantford, Ont., have been approved by the Board of Railway Commissioners. The route map of the section of the line from Brantford to Galt has been approved by the Minister of Railways, and the locations are before the Board of Railway Commissioners. The location plans for the line through Brantford have recently been the subject of considerable discussion with the City Council, and G. A. Mountain, Chief Engineer, Board of Railway Commissioners, has been making special surveys with a view to settling the differences. The contract for the building of the entire line has been let, we are officially advised, to Johnson Bros., Port Hope, Ont., except so far as the steel superstructures for bridges, the station buildings and freight sheds are concerned. A subcontract has been let to P. H. Secord and Son, Brantford, for the masonry on the bridge over the Grand River, Brantford, and the masonry on the line between Brantford and Galt. It was expected that construction work would be started on the line by April 30. (April, pg. 169.)

London and Port Stanley Ry.—In a bill before the Ontario Legislature respecting the proposed electrification of this railway, it is provided that the taxpayers of London, Ont., will be asked to vote on a bylaw to raise $700,000 for the work. It was originally proposed to ask for $800,000, but it was finally arranged that a single track only should be provided, hence the reduction to $700,000. (April, pg. 169.)

The Menzies Bay Ry. Co., which is a subsidiary of the Ross McLaren Lumber Co., proposes to build a railway on Vancouver Island, to open up its timber limits.

Michigan Central Rd.—The contract for the erection of a machine shop and power house at St. Thomas, Ont., is reported to have been let to the Arnold Construction Co., Chicago, Ill. (April, pg. 169.)

North Ry.—We are officially advised that further exploration surveys are being made on sections of this projected line from Montreal to the mouth of the Nottaway River, Que., on Hudson Bay. S. T. Tomlinson, Montreal, is Consulting Engineer. The directors of the company for the current year are:—Hon. N. Curry, Hon. J. M. Wilson, Hon. T. Berthiaume, D. L. McGibbon, F. H. Clergue, C. P. Beaubien, Montreal; W. H. Thorne, St. John, N.B.; W. J. Bell, Sudbury, Ont.; W. Moore. (Feb., pg. 83.)

Pacific and Hudson Bay Ry.—The Dominion Parliament has extended the time within which the lines from Bella Coola, B.C., easterly, and other authorized lines may be built. (Dec., 1912, pg. 605.)

Quebec Eastern Ry.—An action has been entered in the Quebec Courts by Baron L. Pichon to recover from the company and Sir Rodolphe Forget $1,362,235 damages on the alleged failure to carry out contracts for the construction of this projected railway. The contract is stated to have been entered into Sept. 30, 1911, with Sir Rodolphe Forget, and transferred by him to the Q.E. Ry. Feb. 28, 1912, and was for the building of a railway from Sherbrooke to Chaudiere, Que. Baron Pichon claims to have made expenditures on surveys, etc., and made deposits and securities for payments. He now asks that the contract be set aside, and that the [illegible] damages. (Aug., 1912, pg. 412.)

Quebec, Portland and International Short Line Ry.—The Dominion Parliament has incorporated a company with this title to build a line from La Patrie, Que., to the International Boundary, thence along the valley of the North River to a junction with the Maine Central Rd., or the C.P.R. in Eaton Tp. (Dec., 1912, pg. 605.)

The Saskatoon Transfer Ry. is proposed to be built by local interests to connect up a section of the city which is being developed for manufacturing concerns, with the several railways entering Saskatoon Sask. C. A. Wentz returned to Saskatoon, April 7, from Winnipeg, and reported the progress of negotiations with the railways. The principal difficulty in the way of immediate construction is said to be the difficulty of obtaining rails. (Nov., 1912, pg. 558.)

Southern Central Pacific Ry.—An extension of time has been granted by the Dominion Parliament for the building of the lines authorized in 1903 and 1911. (Jan., pg. 21.)

Timiskaming and Northern Ontario Ry. Replying to questions in the Ontario Legislature recently the Minister of Public Works said, the only extension of the line now under construction is the branch from Iroquois Falls Jct., to the Abitibi Pulp and Paper Co.'s plant at Iroquois Falls, in Teefy tp. The branch with spur tracks and sidings will be 7.65 miles long, and is estimated to cost $126,181.27. The cost will be defrayed out of the Consolidated Revenue Fund. (April, pg. 170.)

Tobique and Campbellton Ry.—The New Brunswick Legislature has granted an extension of time for the construction of this projected railway. The company proposes to build a line in continuation of the C.P.R. Tobique Valley Branch to Campbellton, N.B. (See Tobique Valley Ry., Feb., 1912, pg. 68.)

Toronto, Hamilton and Buffalo Ry.—Tenders are under consideration for the building of a second track from Welland to Smithville, Ont., 16.5 miles. (April, pg. 170.)

Van Buren Bridge Co.—Application is being made to the Dominion Parliament to vest in the V.B.B. Co., which has been incorporated by the State of Maine, the charter rights of the Restigouche and Western Ry., (now the International Ry. of New Brunswick), to build a bridge across the St. John River between St. Leonards, N.B., and Van Buren, Me., and to authorize the company to build the bridge. A. E. McKenzie, Campbellton, N.B., is solicitor for applicants. (See International Ry. of New Brunswick, April, pg. 169.)

Railways in Alaska.—The Railroad Commission appointed by the United States Government in 1912 to investigate the transportation question in Alaska, has presented its report. The Commission recommends the building of a line from Chitina to Fairbanks, 313 miles; a branch line 38 miles long in the Bering River coal field; the construction of a line into the lower Susitna Valley, involving 115 miles of new construction; a Matanuska branch, 38 miles long, and an extension of the Susitna line into the valley of the Kuskokwim and the Iditarod section, 229 miles. The estimated cost of building these lines is put at $53,611,000, and the Commission recommends that the work be taken in hand at once.

The Titanium Alloy Manufacturing Co. announces that the sale of its products will hereafter be in charge of the General Manager, Andrew Thompson, with offices at Niagara Falls, N.Y., and that A. C. Hawley will represent the company in the Pittsburgh district, being located at the company's offices, in the Oliver Building, Pittsburgh, Pa.

Canadian Northern Railway Earnings, Etc.

Gross earnings, working expenses, net earnings, increases, or decreases, compared with those for 1911-12, from July 1, 1912:—

	Gross Earnings	Expenses	Net Earnings	Increase
July	$1,829,700	$1,335,100	$494,600	$133,000
Aug	1,745,800	1,375,000	370,800	56,100
Sept	1,671,500	1,248,000	423,500	4,100
Oct	2,351,200	1,645,900	705,300	24,900
Nov	2,509,700	1,631,900	877,800	212,600
Dec	2,132,000	1,551,000	581,000	77,200
Jan	1,513,400	1,243,200	270,200	46,500
Feb	1,398,700	1,130,200	268,500	30,900
	$15,152,000	$11,160,300	$3,991,700	$585,300
Incr	$2,385,800	$1,800,500	$585,300	

Mileage in operation during the foregoing period, 4,297, against 3,981 in the previous year.

Approximate earnings for March, $1,685,900, against $1,572,700 for March, 1912.

Canadian Pacific Railway Earnings, Etc.

Gross earnings, working expenses, net earnings, increases or decreases, compared with those for 1911-12, from July 1, 1912:—

	Gross Earnings	Expenses	Net Earnings	Increase
July	$12,052,398 58	$7,604,221 68	$4,448,176 90	$745,148 57
Aug.	12,251,715 87	7,533,790 21	4,717,925 66	642,354 65
Sept.	11,579,733 98	7,329,430.13	4,250,303 85	332,857 05
Oct	13,060,397.80	7,999,510 61	5,060,887 19	379,782 44
Nov	12,362,666 42	8,104,527 38	4,258,139.04	270,772 55
Dec	12,219,278 72	7,823,559 21	4,395,719 51	289,989 25
Jan	9,679,607 39	8,017,233 61	1,662,373 78	579,516 08
Feb	9,747,685 55	7,227,616.21	2,520,069 34	136,202 67
	$92,953,484.31	$61,639,889 04	$31,313,595 27	$3,376,623 26
Inc	$14,126,429 31	$10,749,806.05	$3,376,623 26	

Approximate earnings for March, $10,965,000, against $10,389,000 for March, 1912.

Grand Trunk Railway Earnings, Etc.

The following figures show the earnings and expenses of the G.T.R., C.A.R., G.T. Western Ry. and D.G.H. & M.R. for Jan., 1913, as compared with those for Jan., 1912:—

Grand Trunk Railway.

	1913.	1912
Earnings	$2,917,500	$2,506,400
Expenses	2,480,600	2,147,100
Net earnings	$436,900	$359,300

Canada Atlantic Railway.

	1913.	1912
Earnings	$168,250	$128,800
Expenses	205,400	155,900
Deficit	$37,150	$25,200

Grand Trunk Western Ry.

	1913.	1912
Earnings	$517,800	$476,000
Expenses	511,650	460,400
Net earnings	$6,150	$15,600

Detroit, Grand Haven and Milwaukee Ry.

	1913.	1912
Earnings	$150,000	$147,700
Expenses	187,850	186,000
Deficit	$37,950	$38,300

TRAFFIC RECEIPTS OF THE SYSTEM.

Aggregate from Jan. 1 to Mar. 31

	1913	1912	Increase
G.T.R.	$9,704,824	$8,298,538	$1,406,286
C.A.R.	546,351	459,451	86,900
G.T.W.R.	1,716,621	1,536,894	179,727
D.G.H. & M.R.	531,117	474,947	56,200
Totals	$12,498,913	$10,769,830	$1,729,113

Grand Trunk Pacific Railway Earnings.

The earnings of the Prairie Section and Lake Superior Branch, for March, were $415,377; and the aggregate for three months ended Mar. 31, was $1,167,305.

The Montreal Auto Bus Co., which has secured a Dominion charter, has an authorized capitalization of $10,000,000, of which it is said $1,000,000 will be subscribed in Montreal. Among the incorporators are Duncan McDonald, formerly General Manager, Montreal Tramways Co., who will, it is said, be General Manager of the new company; H. S. Holt, F. L. Wanklyn, and P. Galibert.

Mainly About Transportation People.

JAS. McCREA, ex President, Pennsylvania Rd., died in Philadelphia, Mar. 28.

SIR MONTAGU ALLAN has donated a cup for the hunter class at the Montreal Horse Show.

T. BELL, of the C.P.R. advertising department, Montreal, has resigned, to take a business position in Winnipeg.

J. P. MORGAN has been elected a director of the New York Central and Hudson River Rd., to succeed his late father.

H. G. KELLEY, Vice President, G.T.R., has been elected a director of the G. T. Pacific Ry., vice E. H. Fitzhugh, resigned.

W. WAINWRIGHT, Vice President, G.T.R., and the Misses Wainwright, returned to Montreal from Atlantic City early in April.

MRS. C. A. HAMMOND, mother of the late H. C. Hammond, formerly President, Northern Navigation Co., died in Toronto, April 24, aged 93.

G. D. PERRY, General Manager, Great Northwestern Telegraph Co., and Mrs. Perry, left Toronto, April 24, for a trip to England.

W. H. C. MUSSEN, of Mussens, Limited, contractors and railway supplies, has been re-elected President of the Thistle Curling Club, Montreal.

W. WAINWRIGHT, Vice President, G. T.R., accompanied by Misses M. and G. Wainwright, returned to Montreal, April 2, from Atlantic City, N.J.

MRS. O'BRIEN, wife of M. J. O'Brien, railway contractor, mine owner, etc., was seriously injured at Renfrew, Ont., April 23, in a runaway accident.

GEORGE BURY, Vice President, C.P.R., delivered an address on "Women's Place in the Business World" at the Women's Press Club, Winnipeg, April 10.

SIR MONTAGU ALLAN, accompanied by Lady and Miss Allan, sailed for Great Britain, from Halifax, N.S., on the s.s. Empress of Ireland, Apr. 4.

ALFRED PRICE, General Superintendent, Alberta Division, C.P.R., Calgary, made a trip east recently, spending a short time in Toronto.

D. M. McINTYRE, K.C., Chairman, Ontario Railway and Municipal Board, is to be given the degree of LL.D. by Queen's University, Kingston, Ont.

J. P. PENNEFATHER, M.D., who died at Winnipeg, April 14, aged 80, was father of F. R. Pennefather, District Master Mechanic, C.P.R., Cranbrook, B.C.

W. MURPHY, who died at Brockville, Ont., April 15, was father of C. Murphy, General Superintendent of Transportation, Eastern Lines, C.P.R., Montreal.

H. G. KELLEY, M. Can. Soc. C.E., Vice President, G.T.R., returned to Montreal at the end of April, from a trip to Havana, Jamaica and the Panama Canal.

R. W. REFORD, of the Robert Reford Co., Ltd., Montreal, has succeeded his late father as a director of the Crown Trust Co. and the Crown Reserve Mining Co.

SIR THOS. G. SHAUGHNESSY sailed from Halifax, N.S., on the s.s. Empress of Ireland, Apr. 4, for Great Britain, to meet Lady and the Misses Shaughnessy.

F. W. PETERS, General Superintendent, British Columbia Division, C.P.R., and Mrs. Peters, arrived in Montreal, April 11, on their way to England for a holiday trip.

F. A. BOURNE, Paymaster, G.T.R., Montreal, has, on the President's nomination, been appointed Assistant Secretary-Treasurer of the G.T.R. Insurance and Provident Society.

D. F. CREIGHTON was the recipient of a presentation from his colleagues of the Canadian Northern Ry. local freight staff on his recent transfer from Brandon, Man., to Regina, Sask.

Sir Richard W. Scott, formerly Secretary of State, who died at Ottawa, Apr. 23, aged 88, was father of D'ARCY SCOTT, Deputy Chairman of the Board of Railway Commisisoners.

A. A. MAVER was chairman, and W. D. Robb and D. Crombie the principal speakers, at the first annual dinner of the apprentices at the G.T.R. Point Charles Shops, held in Montreal, April 11.

MISS N. McNICOLL, daughter of D. McNicoll, Vice-President, C.P.R., has had three pictures accepted for the Royal Society of British artists' exhibition, which opened in London, Eng., April 7.

T. BELL, Assistant General Advertising Agent, C.P.R., Montreal, was presented with a black morocco suit case by the staff of the department, April 18, on his leaving the company's service.

H. J. White,
General Car Foreman, Canadian Northern Quebec Ry., and Quebec and Lake St. John Ry.

H. W. FLANNAGAN, a sub-contractor on the Grand Trunk Pacific Ry., in British Columbia, is stated to have been engaged in railway construction work, as a sub-contractor, for 47 years.

S. C. STICKNEY, former Vice President and General Manager, Chicago Great Western Rd., and recently in private practice, New York City, has been appointed Assistant to the President, Erie Rd.

H. G. CORAM was presented with an address and a purse of gold by the C.P.R. local freight staff, Winnipeg, recently, on retiring from the position of local freight agent there, to engage in farming.

A. A. ALLAN, of the Allan Steamship Co., Mrs. Allan and Miss Hazel Allan, left Montreal early in April for Great Britain, Mrs. Allan having been selected to christen the company's new s.s. Calgarian.

S. P. BROWN, Chief Engineer in charge of construction of the Canadian Northern Ry. tunnel under Mount Royal, Montreal, gave an address on tunnels before the Montreal Canadian Club, April 14.

The engagement is announced of WALLACE H. ROBB, of the Anchor Packing Co., Montreal, and son of W. D. Robb, Superintendent of Motive Power, G.T.R., to Miss E. H. Burrows, of Belleville, Ont.

L. S. TAIT, who died in Montreal, April 8, aged 24, was a brother of Sir Thomas Tait, President, Fredericton and Grand Lake Coal and Ry. Co., and of H. M. Tait, General Agent C.P.R., Minneapolis, Minn.

A. BRUNET, of Montreal, who died in Paris, France, Mar. 22, was the original director appointed by the Dominion Government on the Grand Trunk Pacific Ry. Board, and served in that capacity until 1911.

W. H. BREITHAUPT, M. Can. Soc. C.E., consulting engineer, Toronto, has associated with him C. B. Kingsley, A.M. Am. Soc. C.E., to continue the engineering practice of the late E. H. Keating and Mr. Breithaupt.

MRS. DARLING, wife of T. S. Darling, Manager, Canadian Northern Ry. Land Department, Montreal, who died somewhat suddenly in Duluth, Minn., April 18, was a daughter of A. D. Davidson, Land Commissioner, C.N.R., Toronto.

R. STANLEY, who has been appointed Car Foreman, G.T.R., Allandale, Ont., entered the company's service in 1882 as car repairer and inspector, and from 1903 to Apr. 1, 1913, was leading car inspector at Gravenhurst, Ont.

J. A. FULLERTON was recently presented with a silver loving cup by C.P.R. steamship department officials at Vancouver, B.C., on retiring from the position of C.P.R. Ship's Husband there, a position which he had held for a number of years.

GEORGE BURY, Vice President, C.P.R., returned to Winnipeg, Mar. 28, from a trip to Japan and China. On his way east from Vancouver, B.C., he stopped off at Calgary, Alta., where he was the principal guest at a dinner given by the Board of Trade.

In referring to the appointment of A. P. WALKER, M. Can. Soc. C.E., as Division Surveyor, Ontario Division, C.P.R., Toronto, in our last issue, he was inadvertently described as Assistant Division Engineer, which was his former position.

SIR WILLIAM WHYTE, Lady Whyte and Miss Gladys Whyte, sailed from St. John, N.B., by the s.s. Empress of Britain, Apr. 18, for Liverpool. They will spend a short time in France, and then return to England, expecting to be back in Winnipeg in June.

E. B. WINGATE, who died in Hamilton, Ont., April 22, after a long illness, was engaged some 20 years ago in engineering work on the Toronto, Hamilton and Buffalo Ry. Subsequently he was City Engineer of Hamilton, and afterwards practised privately.

SIR PERCY GIROUARD, director, Sir W. G. Armstrong, Whitworth and Co., of Elswick and Manchester, Eng., is visiting Canada, and it is reported that during his stay he will discuss probabilities of his firm embarking in the shipbuilding business in the Dominion.

W. J. HALLETT, who has been appointed Travelling Car Inspector, Ontario Lines, and part of Eastern Lines, G.T.R., London, Ont., entered G.T.R. service in 1904, and up to 1907 was engaged as car repairer and air brake inspector; 1907 to 1908, Car Foreman at York, Ont.; 1908 to Apr. 1, 1913, Car Foreman at Allandale, Ont.

[illegible] M.P. [illegible] the C.P.R.

W. H. V. [illegible] quently going to the C.P.R. service in the [illegible]

A. T. COLLINS, who has been appointed General Freight Agent, Canadian Lake Line, Toronto, was born at Island Pond, Vt., [illegible] and entered transportation service, in 1884, since when he has been, to 1886, [illegible], G.T.R., Sarnia, Ont.; 1886 to 1893, cashier, G.T.R., Sarnia, Ont.; 1893 to 1907, chief clerk, G.T.R., [illegible], Ont.; 1907 to 1913, chief clerk, Traffic Manager's office, Canadian Lake Line, Toronto.

[illegible], who has been appointed Travelling Passenger Agent, G.T.R., Montreal, was born at [illegible] Agent's office, G.T.R., Montreal; 1899 to [illegible], Montreal; 1903 to Apr. 7, 1913, Ticket Agent, Pullman Co., Bonaventure Station, Montreal.

[illegible] from Feb., 1875, to Aug., 1879, Assistant Engineer, same road, and from Apr., 1881, to Jan., 1884, Chief Engineer, Georgian Bay [illegible]

[illegible], Ont., Mar. 31, aged 68, on his return from [illegible], Toronto, [illegible]

[illegible] B.C., was announced in our last issue, was [illegible] Calgary, [illegible]

[illegible] William, Ont.; [illegible] Mar. 15, 1908, to Oct. 1, [illegible] Hamilton, Ont.

FRANK CLARK, who has recently been appointed Locomotive Foreman, Canadian Northern Ry., Radville, Sask., was born at Cowes, Isle of Wight, Eng., Mar. 20, 1884, and entered railway service [illegible], since when he has been, to June, 1905, apprentice, Isle of Wight Central Ry., Newport; June to Nov., 1905, fitter, London and South Western Ry., Guildford, Surrey; Nov., 1905, to Nov., 1906, locomotive examiner, same company; Dec., 1906, to 1907, fitter, C.P.R., Chapleau, Ont.; 1907 to Feb., 1911, in various capacities, C.N.R., at Dauphin, Man., and Edmonton, Alta.; Feb., 1911, to [illegible], 1913, assistant foreman, C.N.R., Dauphin, Man.

W. H. [illegible], who has been appointed wharfinger, Richelieu and Ontario Navigation Co., and Inland Lines, Ltd., at Yonge St. Dock, Toronto, was born at Ipswich, Eng., Aug. 28, 1872, and entered transportation service, June, 1903, since when he has been, during the navigation seasons, to 1906, Baggage Agent, Niagara Navigation Co., Toronto; and 1907 to 1912, General Baggage Agent, same company, Toronto; during the winter seasons from 1909 to 1912, he was Baggage Agent, Florida East Coast Ry., Palm Beach, Fla.; Aug., 1912, to Apr. 1, 1913, Baggage Agent, Richelieu and Ontario Navigation Co., Western Lines, Toronto.

H. J. WHITE, who has been appointed General Car Foreman, Canadian Northern Ry., and Quebec and Lake St. John Ry., Joliette, Que., and whose portrait appears in this issue, was born at [illegible], Vt., Apr. 1, 1871, and entered C.P.R. service May, 1893, since when he has been, to Sept., 1894, Joint Car Inspector, Newport, Vt.; Sept., 1894, to May, 1898, Joint Car Inspector, St. [illegible] Jct., Que.; 1898 to 1903, Car Inspector, Toronto; 1904 to Sept., 1906, leading hand carpenter at Outremont, Que.; Sept., 1906, to June, 1911, General Car and Wrecking Foreman, North Bay, Ont.; June, 1911, to Mar. 27, 1913, General Car and Wrecking Foreman, West Toronto, Ont.

W. R. HOWARD, whose appointment as Chief Dispatcher and Trainmaster, District 1, Atlantic Division, C.P.R., Brownville Jct., Me., was announced in our last issue, was born at St. Andrews, N.B., Sept. 14, 1871, and entered railway service Sept., 1887, since when he has been, to June, 1889, operator, New Brunswick Ry., at different points; June, 1889, to Oct., 1891, baggageman, C.P.R., between St. John, N.B., and Megantic, Que.; Oct., 1891, to Oct., 1895, agent and operator at different points, Atlantic Division, C.P.R.; Oct., 1895, to Nov., 1912, dispatcher, C.P.R., Brownville Jct., Me.; Nov., 1912, to Mar. 1, 1913, acting Chief Dispatcher, C.P.R., Brownville Jct., Me.

[illegible] National Transcontinental Railway, Winnipeg, [illegible] the Canada Atlantic Ry., since when his [illegible] Transcontinental Ry., Kenora, Ont.; 1906-7, Divisional Engineer, division 7, same railway; [illegible] same railway, North Bay, Ont.; 1910-11, [illegible]

C. J. SMITH, who has been appointed Vice President and General Manager, [illegible] Ry., Montreal, was born at Hamilton, Ont., Mar. 10, 1862, and entered transportation service in 1879, since when he has been, to 1880, clerk in local freight office, Hamilton and North Western Ry., Hamilton, Ont.; 1880 to 1882, in Audit and Purchasing Department, Chicago and Alton Rd.; 1882 to May, 1885, in Construction Department, C.P.R.; June, 1885, to 1886, in Traffic Department, New York, Lake Erie and Western Rd.; 1886 to 1888, chief clerk to General Manager, Chicago and Atlantic Ry.; Jan. to July, 1888, in Traffic Department, Minneapolis, St. Paul and Sault Ste. Marie Ry.; July, 1888, to Jan., 1890, in Traffic Department, St. Paul, Minneapolis and Manitoba Ry.; Jan., 1890, to Mar., 1898, General Freight and Passenger Agent, Canada Atlantic Ry.; Apr., 1898, to Mar., 1904, General Traffic Manager, Canada Atlantic Ry. and Canada Atlantic Transit Co., Ottawa, Ont.; Mar., 1904, to Mar., 1913, General Manager, Richelieu and Ontario Navigation Co., Montreal.

N. E. BROOKS, M. Can. Soc. C.E., who has been appointed Engineer Maintenance of Way, Western Lines, C.P.R., Winnipeg, was born at Sherbrooke, Que., Dec. 25, 1866, and entered railway service in May, 1886, since when he has been, to Mar., 1887, rodman, Ontario and Quebec Branch, C.P.R.; May, 1887, to Apr., 1888, rodman, Atlantic and Northwest Branch, C.P.R.; Apr., 1888, to Aug., 1889, Resident Engineer on Construction, Atlantic and Northwest Branch, C.P.R.; Aug., 1889, to Sept., 1890, Resident Engineer on Construction, Qu' Appelle, Long Lake and Saskatchewan Ry.; Sept., 1890, to Oct., 1891, Resident Engineer, Calgary and Edmonton Ry.; Oct., 1891, to Sept., 1892, leveller, Crowsnest Pass Branch, C.P.R.; Sept. to Dec., 1892, Resident Engineer, Crowsnest Pass Branch, C.P.R.; Dec., 1892, to Dec., 1895, Assistant Engineer of Construction, Montreal St. Ry.; Jan. 1, 1896, to Aug., 1903, Inspector, Calgary and Edmonton Ry. and Qu'Appelle, Long Lake and Saskatchewan Ry.; Aug. to Nov., 1903, Superintendent, Maintenance of Way and Structures, Calgary and Edmonton Ry.; Nov., 1903, to Apr. 15, 1913, Division Engineer, C.P.R., Calgary, Alta.

F. H. McHENRY, M. Can. Soc. C.E., has resigned as Vice President of the New York, New Haven and Hartford Rd. He has been Vice President in charge of maintenance and construction since 1904, and it has been under his general supervision that electric power system of the railway has been established and extended. Until a short time ago he was in charge of the construction and maintenance departments of the Boston and Maine Rd. also. He was born in Cincinnati, Ohio, Jan. 25, 1859, and was educated at the Pennsylvania Military College at Chester, Penn. He began engineering work in 1883 as a rodman on the Black Hills branch of the Northern Pacific Ry. In 10 years he passed through all the engineering grades from rodman to Chief Engineer. After three years as Chief Engineer of the Northern Pacific Ry., he [illegible] Chief Engineer. He retired in 1901, and after spending two years in Japan, China and the [illegible] Islands, became Chief Engineer of the Canadian Pacific Ry. In Oct., 1904, he was made Vice President of the Consolidated Ry., in charge of construction, operation and maintenance of the electric railway lines of the New York, New Haven and Hartford Rd. The office of Vice President in charge of construction and maintenance will be [illegible] and the duties of the office assumed by different branches of the engineering department.

Canadian Pacific Railway Construction, Betterments, Etc.

Atlantic Division. We are officially advised that it is proposed to lay 142 miles of 85 lb. steel rails on the main line between St. John and McAdam, N.B., releasing a similar mileage of 80 lb. rails. On branch lines of the division 126 miles of line now laid with 48, 56, 60 and 62 lb. steel is to be relaid with 72, 73 and 80 lb. steel. About 90 miles of line between St. John and Vanceboro is being equipped with block signals. Of this mileage 46 miles from Fredericton Jct. to Vanceboro was put in operation April 2, and the mileage between Fredericton Jct. and St. John was expected to be ready very shortly thereafter.

We are officially advised that it is proposed to build a new bridge over the St. John River at the reversing falls, St. John, N.B., some time within the next two or three years, but neither the type of bridge to be used, nor the time when it is to be built, has been decided.

Eastern Division.—The new train shed at Windsor St. station, Montreal, is in course of construction. The main part of the steel work was reported to be in place April 16, and the whole work was expected to be completed by April 30.

The Montreal City Council has granted a permit for the erection of a new car shop at the head of Davidson St. at an estimated cost of $131,000.

Press reports state that arrangements are being made for the building of the 25 miles necessary to link up the Nominingue Valley line, now terminating at Mount Laurier, with the Ottawa, Northern and Western Ry., now terminating at Maniwaki, Que.

Campbellford, Lake Ontario and Western Ry.—It is expected that this new line from Glen Tay to Agincourt, Ont., will be completed by Dec. 1. About 70% of the grading and 65% of the bridgework have been done.

Ontario Division.—The building of the second track from Islington to Guelph Jct., about 30 miles, is the principal work in hand for this season west of Toronto. On the section between West Toronto and Islington, on which the second track has already been built, there is a break, at the bridge across the Humber River, just west of the Lambton Golf Club grounds. Tenders are under consideration for the excavation, masonry and concrete work necessary for making this bridge sufficient to carry a second track. The present bridge across the Humber River, west of Lambton, consists of three spans, deck trusses, on two masonry piers and two abutments, each span being about 157 ft. long. It is proposed to make the bridge capable of carrying a second track by extending the present pier and abutments and adding two additional piers, dividing the two end spans in two, thus making four spans of 78½ ft. each and one span of 157 ft. The present steel span will be replaced with new double track spans. The detail plans for the work have not been finally approved. The work is in charge of A. L. Hertzberg, Division Engineer.

The contract for the second track from west of Islington to Guelph Jct. has been let to Jones and Girouard, Ottawa, and a start was made April 21. The work is being done under the charge of — Wellwood as Divisional Engineer, with — Morrison as Resident Engineer, from Islington to Streetsville Jct., and — Rayner as Resident Engineer west of Streetsville Jct.

J. W. Leonard, Assistant to the Vice President, in a letter, April 7, informed the Mayor of Stratford that the company had decided not to reopen the matter of the entrance of the company's line into that city, and that the projected line from Embro to Linwood, via Stratford, would be given up in favor of a connection between Guelph and Bolton.

Guelph and Goderich Ry.—An extension of time has been granted by the Dominion Parliament for the building of the uncompleted portion of this railway.

Lake Superior Division.—We are officially advised that it is intended to add largely to the shops and other buildings at North Bay, Ont., in the near future. The plans and details of the alterations and additions are not fully completed. A report states that the work will cost about $250,000, and that the buildings will consist of a repair shop with a capacity of 10 locomotives, and a car repair shop.

Manitoba Division.—The lift bridge over the Kaministikwia River at Fort William, Ont., has been completed, and the bridge over the McKellar River, between Islands 1 and 2, at Fort William, is expected to be completed early in June. Both these bridges carry a double track.

The contract for the erection of a 6 stall addition to the roundhouse at Fort William, Ont., is reported to have been let to Carter, Halls and Aldinger, Winnipeg.

Piles are being driven by the Thunder Bay Harbor Improvement Co. for the building of a new freight shed for the C.P.R. at the old coal dock on the Kaministikwia River, Fort William. It will have a capacity of 100,000 tons and will be used for the handling of the hard coal traffic.

Contracts are reported to have been let for the following works:—To A. C. Creelman, Winnipeg, for the erection of frame stations at Arnaud, Edrans, Stoney Mountain; section houses at Oberon, Shanawan, Melbourne; extensions to locomotive houses at Arcola, Minnedosa, Man.; Kenora, Ont. To Carter, Halls, Aldinger Co., Winnipeg, extensions to locomotive houses at Fort William, Ont., and Weston, Winnipeg. To C. W. Sharpe, Winnipeg, warehouses and buildings for sleeping and dining car department at Fort William, Ont. To A. Semons, for extensions to the freight car repair shops at Fort William.

The bridge construction in progress at Winnipeg and vicinity consists of a double track bridge over the Red River, 770½ ft. long, with a 258 ft. swing span; a bridge over the Red River on the new Kildonan cut off, about 1,000 ft. long, with a 312 ft. swing span, and a double track bridge, 428 ft. long over the Assiniboine River west of Winnipeg.

Saskatoon Division.—The route maps, approved by the Minister of Railways, for the projected branch from Lanigan to Prince Albert, 117 miles, shows a line crossing the Canadian Northern Ry. at Humboldt and near Birch Hills, and crossing a branch of the Saskatchewan River near mileage 105.

The Board of Railway Commissioners has authorized the opening for traffic of the second track between Mortlach and Parkbeg, Sask., on the transcontinental line west of Moose Jaw, 8.4 miles.

The track laying gang started work April 7, to complete the line from Wilkie into Kerrobert, and a ballasting gang is at work on the 48 miles of line from Macklin to Kerrobert.

Alberta Division.—A three track bridge, 470 ft. long, is being built across the Bow River, east of Calgary, to replace the present single track bridge and a double track bridge is being built across the same river 25 miles west of Calgary. The single bridge will consist of [illegible] spans, [illegible] ft. each. On the Suffield [illegible] branch there will be a bridge [illegible] ft. long over the Bow River.

The high level bridge across the Saskatchewan River at Edmonton, Alta., is expected to be completed in August. The length between abutments approximates 2,550 ft., the extreme height above mean water level is 157 ft. and the piers are [illegible] ft. high. The bridge provides for an upper deck 39 ft. and a lower deck 43 ft. wide; the upper deck will carry the railway track and double electric car tracks, while the lower will be used by vehicles and foot passengers, the sidewalks having a clear space of 8 ft. and the roadway of 23 ft.

Calgary-Vancouver Second Track Work.—There continues to be considerable newspaper speculation as to what is to be done in the way of second track construction on the line between Calgary and Vancouver, the latest report being that it had been decided to drive a tunnel, 16 miles long, through the Kicking Horse Pass at an estimated cost of $14,000,000. We understand that no surveys having in view the construction of such a tunnel have been undertaken as yet, and that it is scarcely likely that anything will be done at least for some time to come. The section of the second track work which will be first completed, we are officially advised, will be that from Golden into Vancouver. With the completion of the Kootenay Central Ry., which is expected to be ready for operation early in 1914, the company will have two routes easterly, one along the existing main line, and the second via the Kootenay Central Ry. and Crowsnest branch.

The building of the second track easterly from Vancouver is being progressed with, and it was expected to have the mileage to Mission City in operation by May 1.

Kootenay Central Ry.—We are officially advised that a contract for grading 65 miles has been let to Foley Bros., Welch and Stewart, the mileage covered being from 60 miles south of Golden to Skookumchuck, B.C. The contract reported as having been let to Boomer and Hughes was awarded in 1912, and covers from mileage 42 to 60. The construction of this section of the line includes the building of a bridge 602 ft. long.

Shuswap and Okanagan Ry.—The Dominion Parliament has extended the time for building the uncompleted sections of this line.

British Columbia Division.—Tenders are under consideration for grading and other work on the Arrow Lake subdivision.

Plans were filed at Ottawa, April 16, for the proposed tunnel under Vancouver, for the purpose of connecting the lines on the Inlet and the False Creek water fronts. The tunnel will be about a mile long.

The company has completed a new ferry slip at Esquimalt, and a car ferry service with the mainland was started April 12. This is in addition to the present service between the mainland and Ladysmith.

Trail, B.C., to Metaline, Wash.—Press reports state that surveys have been completed for a line from Trail, B.C., to Metaline, Wash., and that a route with a 1% gradient has been secured. H. M. Dibbles was engineer in charge of the party. The report states that the C.P.R., or some allied interests, is negotiating for the purchase of the Idaho and Washington Ry., which has a terminal at Metaline, and that the building of a line from Trail to Metaline is a part of the plans. (April, pg. 174.)

Railway Rolling Stock Notes.

[illegible] Ry. has [illegible] 125 [illegible] box cars from [illegible] Car Co.

The Canadian Northern Ry. has ordered [illegible] Canadian Car and Foundry Co.

The G.T.R. is reported to be enquiring prices on 3,000 forty ton box cars and 1,000 fifty ton coal cars.

The Algoma Central and Hudson Bay Ry. has received five consolidation locomotives from Canadian Locomotive Co.

The G.T.R. has received one Pacific type locomotive, 73 in. wheel, from Montreal Locomotive Works; 3 switching locomotives, 20 by 26 in. cylinders, from Canadian Locomotive Co., and 55 box cars from Pressed Steel Car Co.

The Intercolonial Ry. has received 20 [illegible] and 91 box cars from the Canadian Car and Foundry Co.; 50 Hart-Otis steel dump cars, built by the Canadian Car and Foundry Co., from the Hart-Otis Car Co.; 16 box cars, 60,000 lbs. capacity from the Nova Scotia Car Works; 5 consolidation locomotives from the Canadian Locomotive Co.; and 2 consolidation locomotives from the Canada Foundry Co.

The Canadian Northern Ry., between Mar. 14 and April 14, received the following [illegible] Pacific type and [illegible] locomotives, from Montreal Locomotive Works; 7 first class cars and 200 box cars, from Canadian Car and Foundry Co.; 4 second class cars, and 25 flat cars, 60,000 lbs. capacity, from Crossen Car Co.; 2 combination cars, from Preston Car and Coach Co., and 10 cabooses from the Company's Winnipeg Shops.

The C.P.R., between Mar. 12 and April 12, ordered the following additions to rolling stock:—160 vans, 30 steel colonist cars, 11 stock cars, 1 freight refrigerator car, 2 second class cars, 1 first class car, 2 mail and express cars, [illegible] from its Angus Shops; [illegible] cars, from its Winnipeg Shops; 7 Jordan [illegible] ers, 2 wrecking cranes, from F. H. Hopkins and Co.; [illegible] from Mussens Ltd., and 1 [illegible] from Browning Engineering Co.

The Toronto, Hamilton and Buffalo Ry., J. D. McArthur Co., and the Superior Construction Co., have each ordered one Rodger double plough distributing car, and [illegible] being built by the Canadian Car and Foundry Co. Following are the chief dimensions:

[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]

[illegible] to rolling stock:—2 postal cars, 5 colonist [illegible] class cars from the Preston Car and [illegible] and 4 Pacific locomotives from the Mont[illegible] and 5 switching locomotives from the [illegible] dry Co.

[illegible] Steel Foundries Ltd. has re[illegible] tons [illegible] Hart-Otis Car Co. They were built by Canadian Car and Foundry Co. Following are the chief dimensions:—

[illegible]	[illegible]	[illegible]
Width over side sills	8 ft.	10 ins.
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
Height from rail to top of car	8 ft.	1⅜ ins.
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	1 ins.
[illegible]	[illegible]	[illegible]
Width of hopper door opening	2 ft.	

The C.P.R., between Mar. 12 and April 12, received the following additions to rolling stock:—2 second class cars, 1 dining car, 4 tourist cars, 7 mail and express cars, 6 sleeping cars, 16 suburban cars, 10 baggage and express cars and 4 class G2 locomotives, from its Angus Shops; 578 steel frame box cars, 58 steel frame flat cars and 48 automobile cars, from Canadian Car and Foundry Co.; 140 steel frame box cars, from National Steel Car Co.; 3 Lidgerwood unloaders, from Allis-Chalmers-Bullock Ltd.; 3 steam shovels and 2 Jordan ballast spreaders, from F. H. Hopkins and Co.; 5 steam shovels, from Mussens Ltd.; 30 air dump cars, from Western Wheeled Scraper Co., and 252 steel frame box cars, from Barney and Smith Co.

Following are chief details of the 10 consolidation superheater locomotives, and 5 are being built by the Canadian Locomotive Co., and 1 consolidation superheater locomotives, by the Canadian Foundry Co., for the Intercolonial Ry., as mentioned in our last issue:—

	Consolidation	Switching
[illegible]	[illegible] lbs.	
[illegible]	[illegible] lbs.	[illegible] lbs.
[illegible]	16 ft. [illegible] ins.	
[illegible]	[illegible]	[illegible]
[illegible]	[illegible] 11 ins.	[illegible] 7 ins.
[illegible]	[illegible] sq. ft.	[illegible] sq. ft.
[illegible]	[illegible] sq. ft.	[illegible] sq. ft.
[illegible]	[illegible] sq. ft.	[illegible] sq. ft.
[illegible]	63 ins.	51 ins.
[illegible]	Cast Steel	Cast iron
[illegible]	10 x 14 ins.	[illegible] x 11 ins.
[illegible]	[illegible]	[illegible]
[illegible]	Straight top	radial stay
Boiler pressure	180 lbs.	180 lbs.
[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	American
[illegible]	[illegible]	
[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	10 tons	[illegible]
Tank, type	Water bot.	Slop. back
Truck, type	Out. equal.	Arch bar
[illegible]	[illegible]	[illegible]
Wheel, material	W. I. centre, steel tired	W. I. centre steel tired
[illegible]	[illegible]	[illegible]
[illegible]	Steel [illegible]	Steel [illegible]

The Canadian Car and Foundry Co., between Mar. 14 and April 16, received the following orders for rolling stock:—1 all wood Lidgerwood flat car, from F. H. Hopkins and Co.; 6 forty ton trucks, from Dominion Bridge Co.; 250 forty ton steel frame box cars, 2 all wood postal cars, 4 wood combination first class and baggage cars and 5 wood colonist sleepers, from Intercolonial Ry.; 75 forty ton all steel twin hopper coal cars, from Canadian Northern Ry.; 2 all wood Rodger double plough distributing cars, from Hart-Otis Car Co.; 2,000 forty ton steel underframe box cars, from G.T.R., and 39 quarry cars, from Dominion Iron and Steel Co.; and during the same period delivered 1 all wood Lidgerwood flat car to Allis Chalmers-Bullock, Ltd.; 5 first class cars and 186 thirty ton wood box cars, to Canadian Northern Ry.; 32 steel frame drop bottom [illegible] forty ton box cars and 92 forty ton steel underframe flat cars, to C.P.R.; 4 forty ton Hart convertible ballast cars, to Canadian Steel Foundries Ltd.; 1 dump car to Edmonton Radial Ry.; 50 fifty ton Otis dump cars, 142 steel frame box cars and 1 thirty ton refrigerator car, to Intercolonial Ry.; 2 steel street car bodies, to Montreal Tramways Co.; 2 forty ton steel frame box cars and 4 forty ton steel underframe flat cars, to Windsor, Essex and Lake Shore Rapid Ry.; 4 forty ton steel underframe flat cars, and 4 fifty ton trucks, to St. Lawrence Bridge Co.

Great Northern Ry. Lines in Canada.

Press reports recently stated that the G. N. R. proposed to start construction on an extension of the line serving Felon and Great Falls, Mont., to the International Boundary, between Montana and Alberta. The new line, it was reported, was already located to Dupayer, and the extension of this survey would take the line through the Blackfoot Reserve to the International Boundary near the St. Mary's River. The reports further stated that the G.N.R. has secured, or was negotiating for the purchase of, the Western Dominion Ry. charter, which has power to build a line from the International Boundary into the Alberta coalfields and through Edmonton to Fort St. John, B.C. We were officially advised, April 16, that the G.N.R. Co. had "at present no such plans in contemplation" and that the report mentioned was "purely a newspaper story."

The Vancouver, Victoria and Eastern Ry. and Navigation Co.'s line runs into the United States at several points, and from one of these points south of Grand Forks, B.C., a line had been projected along the San Poir Valley. The Spokane and British Columbia Ry., the United States end of the Kettle Valley Ry., was given rights to build along the same valley. After litigation extending over ten years, the G.N.R. announced, April 1, that it had decided to abandon the project of building this line.

Victoria and Sidney Ry.—An agreement has been made by which the rights and property of this railway have been transferred to the Vancouver, Victoria and Eastern Ry. and Navigation Co. The agreement has been formally approved by the City of Victoria and the British Columbia Government, both of which guaranteed the bonds of the V. and S. Ry. (April, pg. 177.)

Taxation of Railways in New Brunswick.

The New Brunswick Legislature has passed an act repealing the act of 1870 respecting the taxation of railways which prohibited the province or municipalities taxing railways. The Premier stated that what was no doubt a wise provision when the first act was passed, might not be so under present conditions. Up to 1875 the province expended $2,000,000 upon subsidies to railways, and since that date $2,907,000 had been expended. With the exception of Prince Edward Island (where the one railway being Government owned was not subject to taxation), Nova Scotia and New Brunswick, all the provinces of Canada taxed railways. The Government had not decided that railways should be taxed, but it was desired to have power to do so, if, upon investigation, taxation was found to be desirable.

The Province of Ontario received $48,000 from express companies operating in the province, during the fiscal year 1911-12 as follows: American Ex. Co., $3,000; Canadian Ex. Co., $17,000; Canadian Northern Ex. Co., for 1911, $3,000, for 1912, $4,500; Dominion Ex. Co., $19,000.

Canadian Railway
AND
Marine World
ESTABLISHED 1898

Devoted to Steam and Electric Railway, Marine, Express, Telegraph, and Railway and Canal Contractors' Interests.
Official Organ of the various Canadian Transportation Associations.

ACTON BURROWS, LIMITED - Proprietors.
70 Bond Street, Toronto, Canada.

ACTON BURROWS, A.Can.Soc.C.E.
Managing Director and Editor-in-Chief.
AUBREY ACTON BURROWS - Secretary and Business Manager.

Associate Editor JOHN KEIR
Associate Editor DONALD F. KEIR
Mechanical Editor FREDERICK H. MOODY, B.A.Sc.

Canadian Advertising Representative W. H. HEWITT
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143 Liberty Street, New York City
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17 Cockspur Street, London, S.W.

SUBSCRIPTION PRICES, INCLUDING POSTAGE:

TORONTO AND WEST TORONTO POSTAL DELIVERY, $1.25 a year.

To other places in CANADA, and to NEWFOUNDLAND AND GREAT BRITAIN, $1 a year.

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NOTICE TO ADVERTISERS.

ADVERTISING RATES furnished on application.

ADVERTISING COPY must reach the publishers by the 10th of the month preceding the date of publication.

TORONTO, CANADA, MAY, 1913.

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The demurrage rate on freight cars, which has been in force on Canadian railways since last fall, has been discontinued, and the old rate of $1 a day, has been restored.

The Canadian Northern Railway Repudiates the Industrial Shippers Guide.

It has been brought to the attention of the Canadian Northern management that the publishers of a book entitled "Industrial Shippers' Guide" are using the name of this railway in soliciting advertising, and that they also claim that, when finished, the book will be distributed by the C.N.R.

The C.N. Ry. management desires to make it perfectly clear to all concerned that if the name of the railway is being used it is done without authority, and contrary to their wishes. The company has no intention of distributing the Industrial Shippers' Guide, and has no connection therewith, and desires to have this matter understood.

Testing of Hearing and Eyesight.—The Board of Railway Commissioners passed general order 103, April 9, making a number of changes in order 17211, July 24, 1912, approving the regulations governing the testing of hearing and eyesight of railway employes.

Railway Lands Patented.—Letters patent were issued during February covering Dominion railway lands in Manitoba, Saskatchewan, Alberta and British Columbia, as follows:—

	Acres.
Calgary and Edmonton Ry.	1,756.00
Canadian Northern Ry.	470.59
Qu'Appelle, Long Lake and Saskatchewan Rd. and Steamboat Co.	1,610.40
Total	3,836.99

CANADIAN ALLIS-CHALMERS CO.—It is announced that the Canadian General Electric Co. has acquired the properties and assets of Allis-Chalmers-Bullock, Limited, in Canada, and that the business will be carried on as Canadian Allis-Chalmers, Limited, J. A. Milne continuing as General Manager. The transaction includes the exclusive right from the Allis-Chalmers Co., of Milwaukee, Wis., to manufacture its patented specialities in Canada.

Locomotive Boiler Reports.—The Board of Railway Commissioners has issued a circular stating that it is in receipt of information that there is now, and there has been for some time past, an unusual number of locomotive fire boxes damaged by shortage of water. In many cases the damage has been of a very serious nature, though fortunately accidents have not resulted in injuries to either enginemen or trainmen, but have only necessitated the shopping of the locomotive for heavy fire box repairs. In order to keep the Board's records for locomotive boilers correct it is of the utmost importance that the Board be furnished with a report covering all such damage as is referred to herein. The Board therefore requests that these reports be forwarded promptly by the railway companies.

The following officers and directors were elected for the current year, at the recent annual meeting of the Montreal Warehousing Co.:—President, E. J. Chamberlin; Vice President, H. G. Kelley; other directors, W. Wainwright, M. M. Reynolds and J. E. Dalrymple; Manager and Secretary, G. H. Hanna.

Until recently, the two 500 h.p. gas engines that supply the power for the Intercolonial Ry. shops at Moncton, were provided with gas from a large producer on the plant. The discovery of natural gas in the country nearby has made the use of the latter desirable, so that recently, the supply of gas for the engines was changed from producer to natural.

Canadian Pacific Railway Machinery Requirements at McAdam Jct.

The following machinery is to be installed in the machine shop which is being built by the C.P.R. at McAdam Jct., N.B.:

1 48 inch belt driven press, 200 tons pressure.
1 double axle lathe, with crane mounted on the machine.
1 42 inch car wheel boring machine.
1 80 inch driving wheel lathe.
1 24 inch drill press
1½ inch to 4 inch pipe threading machine.
1 24 inch x 12 ft. double back-geared engine lathe.
2 20 inch x 8 ft. double back-geared engine lathes.
1 36 inch x 14 ft. double back-geared engine lathe.
1 universal grinding machine.
2 18 inch x 8 ft. double back-geared engine lathes.
1 pneumatic tube welding hammer.
1 centering machine.
1 nut facing machine.
1 51 inch vertical boring mill.
1 1,600 lb. steam hammer.
1 40 ton hydraulic press, for pressing brasses in axle.

Dominion Government Railway to Hudson Bay.

A contract is reported to have been let for the building of two steel barges and two scows for work in the preparing of the harbor for the Hudson Bay terminals of this railway. As soon as they are completed the rest of the dredging plant will be got together, and sent to Hudson Bay for the work. While no decision has been announced as to the location of the terminal, it is believed that it is to be at Port Nelson. H. T. Hazen is expected to be placed in charge of the harbor construction work, and two parties of engineers have been sent overland from Cochrane, Ont., to complete the inshore work, while the s.s. Minto is being outfitted for a voyage to Hudson Bay to complete the survey of the approaches.

The House of Commons has voted a further sum of $750,000 on account of the construction of the railway from Pas to Hudson Bay, and for the provision of terminal facilities and elevators in connection therewith. (April, pg. 177.)

Canadian Freight Association, Eastern Lines

At the annual meeting in Montreal, April 18, the following committees were elected:—

ADVISORY—C. A. Hayes, W. M. Kirkpatrick, G. H. Shaw, J. H. Meglemry.

EXECUTIVE—W. M. Kirkpatrick, F. F. Backus, G. Tombs, H. C. Martin.

CLASSIFICATION—W. M. Kirkpatrick, H. C. Martin, G. Tombs, F. J. Watson, E. N. Todd, L. Macdonald, H. E. Macdonell, G. T. Pettigrew, R. E. Perry, M. H. Brown.

FREIGHT INSPECTION—R. W. Long, G. Tombs, M. H. Brown, R. W. Youngs, L. Macdonald, A. D. Huff, G. H. Clark, W. B. Bamford, W. S. Elliot.

The New Brunswick Transportation Co. has been incorporated under the New Brunswick Joint Stock Companies Act with a capital of $99,000 and office at St. John, N.B., to transport freight and passengers by means of trucks, wagons or other vehicles drawn or propelled by electricity or any other motive power. The provisional directors are:—J. C. Berrie, W. A. Dougherty, H. A. Powell, W. J. Ingram, W. H. Harrison, St. John, N.B.

National Transcontinental Ry. Construction.

[illegible] -truction came up, [illegible] as to [illegible] district D. In district E, the length of [illegible] have been completed, and 195 miles of track [illegible] -en laid, in- [illegible] Transcona to [illegible] -gth of line from [illegible] 1,804 miles: [illegible] ings, 383 miles; telegraph lines, 1,170 [illegible] Quebec before Sept. 1."

[illegible] not moved [illegible] but [illegible] tide. [illegible]

[illegible]

[illegible]

Grand Trunk Pacific Railway Construction.

[illegible] Montreal, April 11, a bylaw was passed authorizing the directors to issue an additional $25,000,000 of debenture stock, to complete the line, the provision of rolling stock and other equipment, and for general purposes. H. G. Kelley, Vice President G.T.R., was elected a director, vice E. H. Fitzhugh, resigned.

M. Donaldson, Vice President, returned to Winnipeg, April 5, after having completed a trip of inspection over the company's lines, in operation and under con- [illegible] the laying of track into Fort George, B.C., [illegible] Rupert end, for 115 miles, during this year. On the section to Fort George, two steel bridges have to be completed over the Fraser River. On the section from Prince [illegible] Gulch, 20 miles east of Hazleton. A steel bridge across the Gulch was expected to be completed by the end of April, when track laying would be resumed. When this work is completed there will remain about 220 miles to be graded and railed to complete the line through from Winnipeg to Prince Rupert. This mileage is all straight work, and unless labor troubles intervened the two sections of the line will be joined [illegible] 1914. [illegible] work is being done on the mileage on which track has been laid.

Contracts are reported to have been let for the building of the following bridges—steel superstructures on concrete and masonry piers and abutments, on the main line:—

248 ft. over McLennan Creek; 129 ft. Little Shuswap; 1,032 ft. Rau Shuswap, 129 ft. Cottonwood Creek; 129 ft. Fifty Mile River; 689 ft. Second Fraser River; 968 ft. Third Fraser River; 459 ft. Willow River; 1,227 ft. Fourth Fraser River; 642 ft. Upper Nechaco River; 154 ft. First Buckley River; 364 ft. Second Buckley River.

The Board of Railway Commissioners has authorized the opening for traffic of the line from New Hazleton, mileage 181, to [illegible] from Prince Rupert, B.C.

Work is proceeding on the dock construction at Prince Rupert.

G. T. Pacific Branch Lines.—Application [illegible] Commissioners for authority to build about [illegible] the terminals in Fort William, Ont., of the [illegible]

[illegible] freight terminals at Fort William in the [illegible] track into the yards will run down Empire Ave. and cross Vickers St. It is reported that the laying out of the yards will be [illegible]

[illegible] year. The branch from Regina to the Inter- [illegible] to the Saskatchewan River, near Riverside, Sask. It is expected to have the branch into Battleford, Sask., ready to hand over to the operating department by July 1. [illegible] Bow River, at the [illegible] Tofield-Calgary branch is well forward, and it is expected to have the line completed and in operation by July 31. Grading will be carried on to finish contracts let in 1912, on the Battleford-Cutknife branch, and on the branch from Biggar to join the Tofield-Calgary line.

Hotel Construction.—M. Donaldson, Vice President, in an interview at Winnipeg, April 5, is reported to have said that the Winnipeg hotel will be opened Oct. 1. It is proposed to erect an hotel at Regina, Sask., in connection with the terminals there. The foundations for the hotel at Edmonton, Alta., are practically completed, and work on the superstructure is to be started at once. Nothing will be done in the way of building an hotel in the mountains this year. Plans are being prepared by F. M. Rattenbury, for an hotel at Victoria, B.C., to cost about $2,000,000. (April, pg. 179.)

Intercolonial Ry. Management.—It was reported from Ottawa, Apr. 4, that [illegible] in connection with the management of the Government railways. The present Managing Board, it is stated, will be dissolved, and the entire operation placed in charge of a General Manager, for which post, F. P. Gutelius, formerly General Superintendent, Eastern Division, C.P.R., and latterly acting on behalf of the Dominion Government [illegible] tion of the National Transcontinental Ry.

Department of Railways and Canals, Canada.

TRENT CANAL
NOTICE TO CONTRACTORS
Lock Gates, Ontario-Rice Lake Division

SEALED TENDERS addressed to the undersigned [illegible] Trent Canal, Peterborough, Ont.

[illegible] the fair wages schedule prepared or to be pre- [illegible]

[illegible] strictly in accordance with the printed forms, [illegible] the actual signature, the nature of the occupation, and place of residence of each member of the [illegible]

[illegible] $5,000.00 made payable to the order of the Min- [illegible]

[illegible] the respective contractors whose tenders are not [illegible]

The cheque of the successful tenderer will be [illegible]

By order,
[illegible]
Asst. Deputy Minister and Secretary.
[illegible]

Canadian Northern Railway, Construction Betterments, Etc.

Canadian Northern Montreal Tunnel and Terminal Co.—The boring of the first two miles of the tunnel under Mount Royal, Montreal, was completed April 5 when the two headings were connected. The bore is being enlarged and lined. There is yet about 8,000 ft. of the tunnel to be bored.

The layout of the city terminus of the line on Dorchester St. is being prepared, and it is stated that the work of preparing the site will be started in June. The main station will be below the street level, and for the purpose of providing the necessary space, the entire area of the two blocks from Cathcart to Laganchetiere St. will be excavated. The buildings will be above the station. Warren and Wetmore, New York, are making the plans for the building.

Montreal-Ottawa-Port Arthur Line. The Minister of Finance stated in the House of Commons April 2, that the following sums had been paid to the Canadian Northern Ontario Ry. from the proceeds of the loans authorized by chap. 6 of the statutes of 1911 for the construction of this line:—Aug. 30, 1912, $1,780,843.97; Oct. 19, 1912, $682,748.90; Dec. 12, 1912, $1,738,520.13; Jan. 14, $820,425.69; Feb. 11, $966,929.90; Mar 20, $732,522.25; total, $6,901,991.25.

Canadian Northern Ontario Ry.—The lift bridge across the Rideau River at Jones Lock, has been completed. The lift span is 57 ft. long, weighs 270 tons, and will be operated by an electric motor.

The Board of Railway Commissioners has approved of revised location plans for the line, mileage 4.35 to 7.21 from Yonge St., through York and Scarboro tps.

By a vote of eight to four, the Toronto City Council, April 8, declined to adopt the resolution of the Board of Control, favoring the annexation by the city of the Leaside townsite, on which the C.N.O. Ry. proposes to lay out terminal yards, and build shops.

Canadian Northern Ry. The new annex of the C.N.R. elevator at Port Arthur, Ont., was put into use Mar. 23, thereby increasing the storage capacity by 3,000,000 bush.

It was reported from Winnipeg, April 5, that no contracts will be let this season for new construction on Western lines.

The Oak Point Branch is being completed from Deerfield to Sheep's Rock Point, Man., 15 miles, giving access to the gypsum mines. As soon as track laying is completed the plant will be transferred to the Grosse Isle Branch, where there is about 35 miles of track laying to be completed between Inwood and Fisherton, Man.

Tenders are being asked for the building of a six stall addition to the locomotive house at Saskatoon.

Track laying on the branch from Vegreville to Calgary, Alta., has been completed to the Bow River, and when the bridges over this river and the Elbow River in Calgary have been completed, the line will be carried right into the city.

Canadian Northern Pacific Ry.—A. T. Fraser, District Engineer, Tete Jaune Cache, B.C., is reported to have stated in Edmonton, April 4, that it was expected to have track laid to the summit, 350 miles west of Edmonton by the end of July. The end of steel on Mar. 30 was at Macleod River, the bridge across which was practically completed. Track laying would be resumed immediately the bridge was completed and would be gone on with uninterruptedly until the Athabasca River was reached, where there would be a short delay pending the completion of the bridge there.

On the section of the line which is being built from Port Mann, B.C., grading and bridge work is so far advanced that it is expected to lay the steel to Kamloops, 243 miles from Port Mann, by Dec. 31. Track has been laid 10.5 miles east of Yale, where a steel bridge is being put in. About 39% of the grading is reported completed between Kamloops and Albreda Summit, on the divide between the Upper Fraser and the North Thompson Rivers.

It is reported that active work will be started on the line between Port Mann and New Westminster, early in June. This is part of the line into Vancouver, which will include a tunnel, about four miles long, to the False Creek flats. It will take about two years to bore the tunnel. T. E. Holt, Executive Agent, Vancouver, is reported to have stated April 1, that special engineers would be engaged immediately to survey and lay out the area acquired for terminals at False Creek. (April, pg. 180.)

Traffic Orders by the Board of Railway Commissioners.

The dates given for orders are those on which the hearings took place, and not those on which the orders were issued:—

Approval of G.T.P.R. Freight Tariff.

18860. Mar. 13. Re application of the G. T. Pacific Ry., under sec. 327 of the Railway Act, for approval of its Standard Freight Mileage Tariff, C.R.C. 15, including and cancelling C.R.C. 13, to apply between stations in British Columbia, Prince Rupert to Beament, inclusive. It is ordered that the said tariff be temporarily approved, pending the result of the Board's enquiry into rates charged generally by railway companies west of and including Crowsnest, Canmore, and Thornton.

Esquimalt and Nanaimo Freight Tariff.

18866. Mar. 14. Re application of Esquimalt and Nanaimo Ry., for an order further extending time within which it may be permitted to file a revised standard freight tariff for the Board's approval. It is ordered that the time within which the company was required to file the said tariff of maximum freight tolls be further extended for six months from the date of this order.

Interchange Track at Port Hope, Ont.

18838. Mar. 13. Re application of Town of Port Hope, Ont., for an order directing the Canadian Northern Ontario and the Grand Trunk Railway Companies to furnish interchange facilities for the handling of traffic of every description between the two companies, within the limits of Port Hope. It is ordered that the C.N.O.R., at its own expense, construct a transfer track between its railway and the G.T.R., in Port Hope; plans showing the location of the track to be filed within 60 days from the date of this order for the approval of an engineer of the Board, and the work to be completed on or before Dec. 31, 1913.

Rates on Lumber in the West.

18909. Mar. 25.—Re order 18771, Feb. 19, 1913, requiring the Canadian Pacific, Canadian Northern and Grand Trunk Pacific Railway Companies to adjust the special joint tariffs filed so that, without increasing any rates shown therein, the rates on lumber and on other commodities carried at the lumber rates, from shipping points west of and including Blairmore and Laggan, Alta., to Winnipeg, shall not be exceeded for similar or less distances from the same shipping points to points in Alberta, Saskatchewan and Manitoba; and directing that schedules to give effect to this order be published and filed to become effective by April 1, 1913; it is ordered that the effective date of the schedules be extended until April 2, 1913.

18910. Mar. 25. Re order 18738, Feb. 19, 1913, directing the Canadian Pacific, Canadian Northern and Grand Trunk Pacific Railway Companies to reduce the local and joint rates on lumber, and on other commodities carried at the lumber rates, from shipping points west of and including Blairmore and Laggan, Alta., to points east of the Red River, so as to graduate less abruptly from the Winnipeg basis to the maximum basis west of Lake Superior; and requiring the said reduced rates to be published and filed to become effective not later than April 1, 1913; it is ordered that the effective date of the reduced rates be extended until April 7, 1913.

Re Rates on Flannelette Sheets.

18944. Apr. 1.—Re application of Montreal Board of Trade for an order requiring flannelette sheets to be added to the dry goods list of the Canadian Freight Classification at the same ratings as are provided for cotton piece goods namely, l.c.l. 2nd class and c.l. 4th class; it is ordered that the application be refused.

Grand Trunk Railway Betterments, Construction, Etc.

Southern New England Ry.—In a letter to the Governor of Rhode Island, E. J. Chamberlain, President G.T.R., states that $2,500,000 has already been expended upon this project, and that to complete it will require some millions more than was originally estimated. The company offers to hand over to the state the line as it at present stands, on condition that the state will complete it and operate it on one of two plans. If the state will operate it as a Government line, running powers will be given over the New London Northern Ry., owned by the Central Vermont Ry., from Palmer to Brattleboro, Vt., so as to constitute a complete division, and a traffic agreement will be given by the C.V.R. for a division of through rates on a mileage basis with an addition for terminal charges. Under the second plan the C.V.R. will lease the completed line on a rental of 5% on the actual cost of completing it. If the state will not take any action, Mr. Chamberlain says the work will be definitely abandoned. (April, pg. 181.)

Automatic Block Signalling on C.P.R.—Automatic block signals are now in operation on the Eastern Lines between Vanceboro, Que., and Mattawamkeag; Montreal and Vaudreuil, Que.; Breslay (near Mile End) and Ste. Therese, Que.; Romford Jct. and Sudbury, Ont.; West Toronto and Bolton, Ont.; Islington and Streetsville Jct., Ont. On the Western Lines, automatic signals are being installed between:—Fort William, Ont., and Molson, Man.; Stephen and Field, B.C.; Crowsnest and McGillivray, B.C.

Reports of Accidents in Railway Shops.—The Board of Railway Commissioners has decided that it will not hereafter deal with accidents occurring in railway shops, or other manufacturing establishments the property of railway companies subject to its jurisdiction; and that such accidents need not be reported, but that all accidents occurring on the railway or in connection with the operation of the railway, including locomotive houses, etc., must be fully and promptly reported to the Board.

Transportation Appointments Throughout Canada.

[illegible] is [illegible] compiled with the greatest care, so as to ensure [illegible] error in our announcements will confer a favor by advising us.

Canadian Northern Quebec Ry., Quebec and Lake St. John Ry.—H. J. [illegible], heretofore General Car and Wrecking Foreman, C.P.R., West Toronto, Ont., has been appointed General Car Foreman, C.N.Q.R., and Q. & L. St. J.R., vice J. S. Jackson, assigned to other duties. Office, Joliette, Que.

J. S. JACKSON, heretofore General Car Foreman, Joliette, Que., has been appointed Car Foreman, at the recently opened passenger car shops at Limoilou Jct., Que.

Canadian Northern Ry.—A. S. BOISVERT, heretofore joint ticket agent, Chateau Frontenac, Quebec, has been appointed City Passenger and Steamship Agent, Quebec.

T. HOWELL, heretofore General Immigration Agent, Toronto, has been appointed Commissioner of Immigration and Colonization. Offices, Toronto, and Charing Cross, London, Eng. His head office will be in Toronto, as heretofore, and not in London, as stated in the daily press.

W. M. [illegible] Immigration Agent, Toronto, has been appointed Travelling Immigration Agent. Headquarters Toronto.

G. A. [illegible] has been appointed City Passenger Agent, Winnipeg, vice N. D. Robinson, resigned to enter private business.

A. H. [illegible] has been appointed Inspector, Sleeping, Dining and Parlor Car, Hotel and News Department, Winnipeg, vice A. B. Webb, resigned.

F. [illegible] has been appointed Travelling [illegible] Sleeping, Dining and Parlor Car, Hotel and News Department, his duties being to inspect supplies issued to all dining and private cars and to look into the care and storage of them on the cars, also to instruct chefs in the uniform preparation of dishes and proper carving of meats, etc.

F. M. ATKINS [illegible] Immigration Agent at Winnipeg.

W. STOTT, heretofore Travelling Passenger Agent, Saskatoon, Sask., has been appointed City Ticket Agent, Brandon, Man., vice F. J. Creighton, transferred.

F. J. CREIGHTON, heretofore City Ticket Agent, Brandon, Man., has been appointed City Ticket Agent, Regina, Sask., vice K. E. McLeod, transferred.

R. F. McNAUGHTON, heretofore chief clerk to District Passenger Agent, Saskatoon, Sask., has been appointed Travelling Passenger Agent, Saskatoon, Sask., vice W. Stott.

K. E. McLEOD, heretofore City Ticket Agent, Regina, Sask., has been appointed [illegible]

Canadian Pacific Ry.—[illegible] Borbridge, transferred. Office, Montreal.

T. BELL, Assistant General Advertising Agent, Montreal, has resigned, to enter private business.

J. M. BURKE, heretofore District Master [illegible] has been appointed District Master Mechanic, District 4, Eastern [illegible]

W. BORBRIDGE, heretofore District Master Mechanic, District 2, Eastern Division, and Montreal Terminals, Montreal, has [illegible] District 5, Eastern Division. Office, Smiths Falls, Ont.

[illegible] Engineer, Calgary, Alta., has been appointed Engineer Maintenance of Way, Western Lines, vice R. C. St. John. Office, Winnipeg.

W. R. BARNARD has been appointed Travelling Industrial Agent, Department of Natural Resources, Winnipeg.

T. MARTIN, heretofore Foreman of repair yard, Winnipeg, has been appointed Foreman, freight car shop, there, vice H. N. Osborne, transferred.

S. J. PIGGOTT, heretofore Assistant Foreman, repair yard, Winnipeg, has been appointed Foreman, vice T. Martin, promoted.

E. HORETZKY has been appointed Travelling Industrial Agent, Department of Natural Resources, Saskatoon, Sask.

E. F. ANDREWS has been appointed storekeeper at Estevan, Sask.

A. G. BROOKER, heretofore ticket agent, Revelstoke, B.C., has been appointed Travelling Passenger Agent, Calgary, Alta., vice J. V. Murphy, appointed District Passenger Agent, as announced in our last issue.

C. J. Smith,
[illegible] Manager, North R.

H. N. OSBORNE, heretofore Foreman, freight car shop, Winnipeg, has been appointed General Car Foreman, Ogden Shops, Calgary, Alta.

W. H. MITCHELL has been appointed Travelling Industrial Agent, Department of Natural Resources, Calgary, Alta.

[illegible] has been appointed Assistant Roadmaster, District 2, British Columbia Division, vice C. Fossett. Headquarters, North Bend.

F. YOUNG, Yardmaster at Nelson, B.C., has resigned, effective May 1. Up to the date of going to press, we have not been advised of the appointment of a successor.

J. A. CHARTERS has been appointed Agent, Sleeping, Dining and Parlor Cars and News Service, Vancouver, B.C., vice W. H. Pratt, promoted.

D. C. ALEXANDER has been appointed Travelling Industrial Agent, Department of Natural Resources, Vancouver, B.C.

[illegible] has been appointed Agent, Atlantic Steamship Lines, at Trieste, Austria.

Chicago, Milwaukee and St. Paul Ry.—H. H. STEVENSON has been appointed City Ticket Agent, New Westminster, B.C., reporting to the Commercial Agent, Vancouver.

Grand Trunk Ry.—W. FYFE has been appointed General Yardmaster, Montreal Terminals, vice R. Gilmour, appointed Superintendent, Montreal Terminals, as announced in our last issue.

J. E. CROSSLEY, heretofore Ticket Agent, Pullman Co., Bonaventure Station, Montreal, has been appointed Travelling Passenger Agent, G.T.R., reporting to District Passenger Agent, Montreal.

A. RODGER has been appointed Telephone Inspector, for the line between Brockville and Montreal, and for the terminal dispatching system, Montreal Terminals. Office, Montreal.

D. GODIN has been appointed Telephone Inspector for the line between Toronto and Brockville. Office, Belleville, Ont.

JAMES ANDERSON, heretofore chief clerk, City Passenger and Ticket Agent's office, Hamilton, Ont., has been appointed Travelling Passenger Agent, Toronto, reporting to the District Passenger Agent, there.

R. STANLEY, heretofore leading car inspector at Gravenhurst, Ont., has been appointed Car Foreman at Allandale, Ont., vice W. J. Hallett, promoted.

R. E. WAUGH, heretofore Agent at Stratford, Ont., is reported to have been transferred to the Transportation Department at Hamilton, Ont.

W. J. HALLETT, heretofore Car Foreman at Allandale, Ont., has been appointed Travelling Car Inspector, Ontario Lines, and Districts 8, 9 and 10, Eastern Lines. Headquarters, London, Ont.

H. McDOUGALL, heretofore Travelling Freight Agent, Stratford, Ont., is reported to have been appointed Agent, there, vice R. E. Waugh, transferred to Hamilton, Ont.

J. W. CANATSY, heretofore Yardmaster, Wabash Rd., Montpelier, Ohio, has been appointed General Yardmaster, G.T.R., at Black Rock, N.Y., and Fort Erie, Ont., vice J. R. Hamilton, resigned.

Intercolonial Ry.—W. McKEE has been appointed Car Foreman at St. John, N.B., vice W. Ferguson, deceased.

E. GORHAM has been appointed acting Trackmaster, with territory from Campbellton, N.B., to Ste. Flavie, Que., Moncton and Ste. Flavie District, vice J. Patterson, retired. Headquarters, Campbellton, N.B.

We are officially advised that no appointment has been made to the position of Assistant General Passenger Agent at Montreal, vacant since the death of H. A. PRICE, all correspondence in connection with the office of District Passenger Agent, Montreal, being addressed to the General Passenger and Ticket Agent, at Moncton, N.B.

Kettle Valley Ry.—W. J. McLEAN, heretofore Master Mechanic, Duluth, Rainy Lake and Winnipeg Ry., and Duluth, Winnipeg and Pacific Ry., West Duluth, Minn., is reported to have been appointed Master Mechanic, K.V.R., at Penticton, B.C.

New York Central Lines.—H. L. INGERSOLL, heretofore Assistant General Manager, New York, has been appointed Assistant to Senior Vice President, performing such duties as may be assigned to him by the Senior Vice President (A. H. Smith). Office, New York.

North Ry.—C. J. SMITH, formerly General Manager, Richelieu and Ontario Navigation Co., Montreal, has been appointed

Vice President and General Manager, North Ry., in charge of construction and operation of the line, with general jurisdiction. Office, Montreal. The North Ry. is projected to be built from Montreal to the mouth of the Nottaway River, on James Bay, Que. The Hudson Bay Steamship Co. is projected in the same connection, to develop the fishery and other resources of James and Hudson Bays, and also to carry grain, etc., between the terminus of the Dominion Government railway on Hudson Bay, and the North Ry. terminus on James Bay, thus providing a route from the northwest by water and rail to Montreal.

Pacific Great Eastern Ry.—H. N. MERRIAM has been appointed Division Engineer in charge of construction from Newport to Lillooet, B.C. Office, Lillooet, B.C.

Richelieu and Ontario Navigation Co.—See R. & O.N. Co.'s appointments on pg. 243.

Timiskaming and Northern Ontario Ry.—A. T. MOTH has been appointed Locomotive Foreman at Cochrane, Ont., vice J. Walters, resigned.

Railway Finance, Meetings, Etc.

Algoma Terminal Co.—An issue of $2,636,500 first mortgage 50 year 5% bonds has been placed on the London, Eng., market. They are guaranteed as to principal and interest by the Lake Superior Corporation. The proceeds of the issue will be expended upon the completion of terminals in Sault Ste. Marie, Ont., and elsewhere, for the Algoma Central and Hudson Bay Ry., and the Algoma Eastern Ry.

Canadian Northern Ry.—A lease of rolling stock from the Imperial Rolling Stock Co. to the C.N.R., numbered series G. 1., was deposited with the Secretary of State, Ottawa, April 3.

Dominion Atlantic Ry.—Passenger earnings for March, $27,959 04; freight earnings, $46,969.20; total earnings, $74,928.24.

Pacific Great Eastern Ry.—The issue of £1,000,000 of 4½% first mortgage debenture stock, principal and interest guaranteed unconditionally by the British Columbia Government, which was offered on the British market recently, is secured by a first mortgage on the line to be built, the rolling stock, equipment, property and franchises, exclusive of terminals and any subsidies that may be granted, and subject only to the payment of working expenses as defined by the Railway Act. The proposed line, which is to run nearly north and south from Vancouver to Fort George, about 450 miles, is intended to form the main trunk route from Vancouver northward through the centre of the province, connecting at Fort George with the G.T. Pacific Ry., with which a traffic agreement has been entered into, and it is anticipated that there will be sufficient returns to ensure profitable working from the outset. The company and its capital stock, property, etc., are exempt from all taxation, provincial or municipal, until July 1, 1926, and the amount of stock or bonds guaranteed is limited to $35,000 a mile of railway. The proceeds of the issue will be placed to the credit of the Provincial Minister of Finance, to be released on the Government's order, in periodical payments, to the company as construction is proceeded with to the Government's satisfaction.

Temiscouata Ry.—Gross earnings for Jan., $19,729.16; operating expenses, $14,877.36; net earnings, $4,851.80. Aggregate net earnings for seven months ended Jan. 31, $34,562.

Victoria and Sidney Ry.—The rights and property of the V. and S. Ry., owned by the Great Northern Ry. (U.S.A.), have been transferred to the Vancouver, Victoria and Eastern Ry. and Navigation Co. The agreement provides for the payment to the City of Victoria and to the Provincial Government $60,000 on account of interest paid on the guaranteed bonds, and the assumption by the V., V. and E. Ry. and N. Co. of the payment of the entire interest during the remaining four years, for which the guarantees run, and the payment of the principal on its becoming due.

White Pass and Yukon Route.—Earnings for two months ended Feb. 28, $39,639, against $22,840 for same period 1912.

Winnipeg and Northern Ry.—Application is being made to the Board of Railway Commissioners for a recommendation to the Governor-General in Council sanctioning an agreement for the amalgamation of the W. and N. Ry. with the Canadian Northern Ry.

Lake Erie and Northern Ry. Co's Bond Issue. Etc.

When this line was first projected it was as an electric railway and was, therefore, dealt with in Canadian Railway and Marine World's Electric Railway Department. Some months ago we were officially advised that it would be built, at least at first, as a steam railway. Now, as will be seen below, it is stated that it is to be an electric line.

A prospectus has been issued of $1,000,000 1st mortgage 5% bonds of the L.E. & N.R. Co. which are offered at 92½ and accrued interest, with a bonus of 25% in common stock. The capitalization authorized and issued is as follows:—1st mortgage 5% bonds, $1,100,000; 2nd mortgage 5% bonds, $500,000; common stock, $1,500,000. The directors are J. Muir, H. Cockshutt, L. Harris, J. Sanderson, W. P. Kellett, Brantford, Ont.; R. Thomson, Paris, Ont.; F. H. Deacon, Toronto; M. N. Todd, Galt, Ont.; G. W. Farrell, Montreal.

The following are extracts from the prospectus:—The L.E. & N.R. Co. was incorporated by the Dominion Parliament, in 1911. The company is authorized to construct a line of railway from Port Dover on Lake Erie, through Simcoe, Waterford, Brantford and Paris to Galt, on the C.P.R. main line, a total distance of 53 miles. The Dominion Government has granted a subsidy of $6,400 a mile, or a total grant of approximately $340,000.

The chief object of the road is to provide a direct route between Brantford and various other municipalities in that district to connect with the C.P.R. at Galt, in addition to providing an outlet on Lake Erie to enable the manufacturers of this district to ship their goods by water, during the open season, to the northwest. It will also greatly facilitate direct importations of raw materials from the United States, such as coal, coke, pig iron, sheet metal, etc., of which these municipalities consume very large quantities. For this purpose it is proposed to put in operation a car ferry service between Port Dover and some port on the U.S. side of Lake Erie. As an example of the strong strategic position this road will occupy, we would instance the northern division from Brantford to Galt, which will give Brantford shippers direct connections with the C.P.R., with a haul of only 20 miles. At present Brantford and Paris freight consigned to the C.P.R. must first go over the Toronto, Buffalo, and Hamilton Ry. to Hamilton, and from Hamilton over the G.T.R. lines to Toronto, a distance of 62 miles before it reaches the C.P.R. This road will further permit of the T. H. & B. Ry. accepting freight from Hamilton, Buffalo and other points for Paris, Preston, Berlin, and all points along the C.P.R. main lines east and west of Galt.

Contracts have been given out for the building of the road, and an engineering force is at work completing all necessary details to permit of an early start being made in actual construction. The character of the country through which the road passes will permit of easy curves and grades without excessive excavation. There is practically no rock cutting, and the bridges are comparatively few in number and present no engineering difficulties. It is the intention to electrify the entire system from Galt to Port Dover, and throughout a high standard of construction will be maintained, including 85 lb. rails. It is expected that the road will be in operation by the latter part of 1913.

Of the bonds the total 1st mortgage issue was sold to G. W. Farrell & Co., while the 2nd mortgage issue was purchased by the various municipalities through which the road will run in the following proportions:—Brantford $125,000 and Port Dover, Simcoe, Paris and Galt, $25,000 each; and the remaining $275,000 by the directors and other interests closely identified with the road. The proceeds of the above 1st and 2nd mortgage bonds, together with the subsidy of approximately $340,000, is all available for the construction of the road, and is sufficient to provide for the building of a line costing considerably over $30,000 a mile. In view of the favorable character of the country through which this road will pass it will be evident that more than ample allowances have been made for all requirements.

It is difficult to estimate the revenue of a new road, but the earnings of roads in adjacent territory will serve as a fair basis for comparison. The net earnings per mile of main line of the Toronto, Hamilton and Buffalo Ry. are over $6,500. The net earnings per mile of main line of the Galt, Preston and Hespeler St. Ry. running north of Galt and connecting with the C.P.R. are over $3,700. To pay interest on the 1st and 2nd mortgage bonds of the L.E. & N.R., including sinking fund, and to pay 4% dividends on the common stock would require net earnings per mile of approximately $2,800. It is unreasonable to expect that the L.E. & N.R. will equal the earnings of the T., H. & B.R. for some years at least, but there is every reason to believe in view of its stragetic position and the many favorable features surrounding it, that the L.E. & N.R. should, within a very few years, show a substantial rate of earnings on its common stock.

The directors include a number of the most prominent manufacturers in Brantford and Paris, all of whom are in a position to influence a very substantial proportion of the freight originating in that territory. A traffic agreement with the C.P.R., on completion of the road, will ensure the L.E. & N.R. the handling of all freight consigned C.P.R., inbound and outbound, along the whole district between Galt and Port Dover. As the L.E. & N.R. will serve as a very valuable feeder to the C.P.R. and will give it direct access to Brantford, the support and good will of the latter corporation is assured.

G. W. Farrell & Co., Montreal, advise us that the bonds were all sold before the prospectus was issued.

The Canadian Society of Civil Engineers has removed to its new quarters, 176 Mansfield St., Montreal.

Telegraph, Telephone and Cable Matters.

F. Kenny has been apointed local manager, C.P.R. Telegraphs, Lethbridge, Alta., vice —. Miller, resigned.

C. E. Lillie, local manager, Great North Western Telegraph Co., Quebec, Que., was recently presented with a silver tea service by the local staff, on leaving the company's service.

F. Boomer, heretofore chief operator, Ottawa, has been appointed local manager, Great North Western Telegraph Co., at Quebec, vice C. E. Lillie, resigned to enter private business.

The case against G. Hogarth, local manager, Great North Western Telegraph Co., Toronto, for allowing the company's wires to be used for the transmission of messages relating to betting, was dismissed, Apr. 2.

The Great Northwestern Telegraph Co. has reopened its offices at Beamsville, Ont., and Coteau Jct., Dunham, Little Metis, Little Metis Light House and Matane Light House, Que. It has changed the name of Cedar Hall, Que., office to Valbrillant.

The Postmaster General has given notice in the House of Commons, that he will introduce a bill to provide for more advantageous conditions for telegraphic communication between Canada and Great Britain and other parts of the British Empire. It is said that the changes will involve the establishment of a board to have charge of the landing licenses for cable lines, and other matters.

C. E. Lillie having resigned his position as Manager of the Great Northwestern Telegraph Co., Quebec, Que., F. D. Boomer, chief operator at Ottawa, has been appointed in his place. Mr. Lillie, who had been in the company's service for a number of years, has been appointed office manager of the Canadian Import Co. A silver tea service was presented to him by the Quebec staff on his leaving the service.

W. J. Rooney, Superintendent of Plant, G.T. Pacific Telegraph Co., is reported to have stated in Winnipeg, recently, that the telegraph construction for the current year, will include the following lines:—from Harte to Brandon, Man.; completion of Regina-International Boundary, and Regina-Moose Jaw branch lines, Sask.; completion of the Young-Prince Albert branch, Sask.; a portion of the Battleford section through the Cutknife District, Sask.; an extension from Biggar, Sask., and the completion of the Tofield-Calgary line, Alta. The erection of telegraph lines on the main line between Tete Jaune and the Shuswap River, B.C., is proceeding, and will keep pace with the laying of steel on the G.T.P.R.

The C.P.R. Telegraph Department has equipped two of its wires between Montreal and Toronto with the printing telegraph. Each circuit is worked duplex so that on the two wires two messages can be sent in each direction simultaneously. At the sending end, is a keyboard somewhat similar to a typewriter and all that has to be done to transmit a message is for the sending operator to depress the keys in the same way as though writing a letter or telegram on the typewriter; with the instrument is a recorder which shows exactly what keys have been depressed and whether any mistake has been made. At the receiving end the operator simply feeds in ordinary message blanks as required and the messages are printed automatically on them.

The C.P.R. Telegraph Department, in conjunction with the Commercial Cable Co., on Apr. 13, established direct communication with London, Eng., from Montreal, Toronto, Winnipeg, Vancouver, Victoria and Bamfield, B.C., where the Pacific Cable Board's station for the New Zealand cable service is situated. A number of congratulatory messages were sent from the cities mentioned, chiefly to Lord Strathcona. The telegraphic codes in use in Great Britain and on the American continent are different, but this has been got over by having a number of operators at each point conversant with the British or continental code. The question of the adoption of a universal telegraphic code is one which might with advantage be taken up by the various systems, and as all the cable companies and wireless telegraph companies, and all countries operating telegraphs, apart from the American continent, use what is termed the continental code, it might with advantage be made universal.

At the end of Dec., 1911, the Russian Postal Department ordered three wireless stations for the northeastern district of Asia. Each station was to consist of two steel towers 250 ft. high, with antennæ and counterpoises, two kerosene motor sets of 24 h.p. each, coupled to 15 wilowatt, 500 cycle, alternate current generators, a transmitter of 7.5 kilowatts capacity and receiving an auxiliary apparatus. The three stations now completed and have been taken over by the Department, which has opened them up to public service. They are located respectively at Ochotsk, Nayachan, and Novomariinsk. Ochotsk, about 1,200 miles from Vladivostok, is a small town of 300 inhabitants on the western coast of the Ochotsk Sea. Nayachan, abou 1,700 miles from Vladivostok, is in an entirely uninhabited tract at the north coast of the same sea, while Novomariinsk, about 2,200 miles from Vladivostok, is a fishing hamlet on the north coast of the Behring Sea on the mouth of the River Anadyr. Nayachan and Novomariinsk are touched twice a year by the mail steamers of the Voluntary Fleet.

The Board of Railway Commissioners has ordered telegraph companies to transmit and receive for delivery both plain and code language Japanese telegrams at code language count, maximum of ten letters a word, between points in Canada and on Canadian portions of the service in, and in connection with, transmission and receipt of such telegrams to and from inland points outside Canada, until such time as a sufficiently comprehensive dictionary, including Japanese language, is prepared and approved, it being understood that code words of more than ten letters must be counted and charged at cipher rate, viz., five letters to a word, but genuine words of more than ten letters may be used in their ordinary sense in a code message or in plain language message, and in such case shall be counted at the rate of ten letters to a word. Plain language telegrams to be composed of plain Japanese words written in Roman letters and authorized by current usage of Japanese language; code language telegrams to be constructed of words, whether genuine or artificial, written in Roman letters and formed of syllables capable of pronunciation, according to current usage of the English language; such tolls to be made effective not later than June 1. (The question as to who is to judge whether a word of more than ten letters is authorized by current usage of the Japanese language, and therefore chargeable at the rate of ten letters to a word, or whether such a word is a code word, and chargeable at the rate of five letters to a word, appears to be left open. The percentage of clerks receiving telegrams for transmission who are intimately acquainted with the Japanese language is, naturally, infinitesimal.—EDITOR.)

Among the Express Companies.

W. S. Martin has been appointed agent, Dominion Ex. Co., Portage la Prairie, Man.

P. G. Donnelly, heretofore messenger, Dominion Ex. Co., has been appointed agent at Levis, Que.

C. Dowling, heretofore agent, Dominion Ex. Co., Winnipeg, has been appointed General Agent there.

E. C. Miner, heretofore Assistant to General Agent, Canadian Ex. Co., Montreal, has been appointed General Agent, there, vice R. Murphy, resigned.

C. N. Spooner, formerly route agent, Dominion Ex. Co., Winnipeg, has been appointed Assistant Superintendent, Western Division, with office at Moose Jaw, Sask.

F. Deno, heretofore claims clerk, Winnipeg, has been appointed acting route agent, Dominion Ex. Co., Winnipeg, vice C. N. Spooner, transferred to Moose Jaw, Sask.

The annual meeting of the Canadian Ex. Co., was held recently. Following are the directors for the current year:—E. J. Chamberlin, Chairman of the Board; John Pullen, President; F. Scott, Secretary-Treasurer; M. M. Reynolds, H. Paton and W. Wainwright.

The Board of Railway Commissioners has defined the express delivery and collection limits for St. John, N.B., and has ordered that for the collection and delivery of express freight within the municipal limits of West St. John, a charge of 10c. for each single shipment of one and more packages of a gross weight of 100 lbs. gross weight or less, and 5c. for each single shipment of one or more packages of a gross weight of 500 lbs. or less, and greater than 100 lbs., in addition to the ordinary toll for rail carriage to or from the St. John railway station, may be made, such additional charge to include the ferry toll.

A press dispatch from Ottawa, Apr. 23, states that the Board of Railway Commissioners has ordered a 20% reduction in express rates in Prairie Provinces and British Columbia, with rates in the east left untouched, until the Board has obtained further information as to the working of the reductions made some time ago. The Canadian Ex. Co., it is stated, has shown a falling off in its profits, from 13.1% to 6.09% in 1912, which it is considered is due more to increased expenses than to reduction in rates. The Canadian Northern Ex. Co. made a profit of 24.7% in 1912, and the Dominion Ex. Co. also did well in the West. The companies claim that the cost of doing business in the west is greater than in the east, but the Board considers this has been unduly emphasized, and therefore orders a reduction of 20% in the standard maximum tariffs for traffic classified as merchandise, in the prairie provinces and British Columbia, the present minimum charge of 25c. not being interfered with, to become effective, July 15.

The Board of Railway Commissioners has recommended the Governor in Council to sanction an agreement made between the Canadian Northern Ry., the Midland Ry. of Manitoba, the G.T. Pacific Ry., the National Transcontinental Ry., and the Minister of Railways and Canals, providing for the running of the Midland Ry. of Manitoba's trains into Fort Garry Union Station, Winnipeg.

Electric Railway Department.

Results of the Edmonton Radial Railway's Operation.

The Edmonton Radial Ry., which is owned by the City of Edmonton, Alta., and is under the control of the city commissioners, has 30.25 miles in operation, located in and between Edmonton and Strathcona.

The following comprehensive report of the result of the operations for 1912, with proposals for changes, especially in fares, for this year, was made recently by the Superintendent, W. T. Woodroofe:—

Now that preliminary statements have been prepared for Oct., Nov. and Dec., 1912, I am able to make out a report showing the operations during the year 1912, and also the prospects during 1913. These figures are not final, but are sufficiently correct to show exactly the financial conditions existing in this department.

THE CAPITAL ACCOUNT for this department was increased in 1912 by $602,006.67, bringing the total at the end of 1912 to $1,582,453.33. This increased the capital charges against revenue, in April, 1912, from $5.372.54 to $9,147.25. A considerable amount of money appropriated by this department in 1912 was not used; it appears to me that in future it would be a good policy not to raise any money unless it is decided to proceed with the work at once. As soon as debentures are issued the department is charged with 7% interest; for instance, $60,000 were appropriated for the new car barns some years ago, and $92,000 for the high level bridge. The department has been paying 7% on these debentures since that time, although the new car barns were only started last July, and there is still a large balance in the high level bridge account.

OPERATION, 1912.—The receipts and expenses were as follows:

Month.	Receipts.	Expenses.	Profit.	Deficit.
January	$27,266.62	$33,069.77	$	$5,803.15
February	26,033.76	28,111.67	......	2,077.91
March	29,966.20	35,084.61	......	5,118.41
April	33,441.45	31,663.68	1,777.77	......
May	39,276.30	44,312.74	......	5,036.44
June	41,009.31	38,393.60	2,615.71	......
July	44,926.25	41,244.64	3,681.61	......
August	50,961.83	47,113.02	3,848.81	......
September	43,433.58	48,380.44	......	4,946.86
October	46,834.59	52,441.82	......	5,607.23
November	46,142.55	51,119.40	......	4,976.85
December	47,161.47	52,013.75	......	4,852.28
			$11,923.90	$38,419.13
				11,923.90
Total deficit				$26,495.23

Only in June, July and Aug. was a profit recorded. April cannot be considered, as an item was left out of the capital charges, which accounted for this apparent profit; the following month, when the charge was transferred, an extra large deficit was shown in consequence. The reason for there being a profit during June, July and Aug. was the fact that the receipts per car mile were very high, while the expenses per car mile remained the same. These receipts in September dropped owing to the fact that extra cars were put on and the services improved on several lines, the expenses per car mile had also been reduced, but not sufficiently to maintain the surplus shown in June, July and Aug. One important reason for the expenses keeping up since September is the fact that a large increase in wages was granted to motormen and conductors, and car repairers, on Sept. 1; this increase amounts to an average of 17%. Since this change in the wage schedule was put into effect it has increased the expenses of this department as follows:

Month.	Motormen and Conductors.	Car Repairers.
Sept.	$1,683.66	$750.00
Oct.	1,758.55	800.00
Nov.	1,837.11	1,000.00
Dec.	1,919.30	1,200.00
	$7,198.62	$3,750.00
		7,198.62
Total		$10,948.62

Another charge against this department since August has been for repairing, etc., the low level bridge; these charges aggregating $11,611.39, one-third of which is charged against this department. These two items will give you some idea as to the heavy expenses which this department is up against at the present time.

Analyzing carefully the earnings, we find that every dollar earned is expended as follows:—

Maintenance of way and equipment	14%
Operation	38%
Power charges	39%
Capital	19%
Total	110%

This shows a deficit of 10%; we therefore come to the conclusion that the receipts must be increased or the expenses reduced. Every effort is being made to cut down expenses without sacrificing an efficient service or allowing the maintenance to fall behind, but no great benefit can be expected along these lines, until the system as a whole is put into better condition. We will take each item of the expense separately, in order to find whether this portion of the expense can be cut down:—

1. Maintenance of way.—The only way these charges can be reduced is by laying permanent track in place of open track, on mud bottom, now existing. The estimates for 1913 provide for replacing all temporary track with permanent construction.

2. Maintenance of equipment can be reduced by building a new car barn (which is now being done), and installing efficient tools and labor saving devices.

3. Power charges can be reduced only by using every means to economize power; this can be done by doing away with electric heaters, cutting down the time schedule, and properly instructing motormen how to handle the controllers. The cost of production can also be reduced so that the price per k.w.h. could be cut down.

4. Capital charges can be cut down by doing only work which is absolutely necessary, and work that will reduce the maintenance charges at the same time. No capital should be raised for any work, unless it is the intention to proceed with the work immediately. Money borrowed and not used increases the capital charges.

PROSPECTS FOR 1913.—I propose to increase the capital account in 1913 by approximately $1,500,000; this expenditure is to replace all present temporary track with permanent track construction; provide permanent junctions at intersecting lines; provide sufficient rolling stock to give a good service; provide substations and a proper system of power distribution; complete the new car barns and equip them with the necessary tools; build only those extensions which are absolutely necessary, and these to be put down in permanent construction.

I have made considerable investigation into the prospects for 1913, and the following statement shows the probable receipts and expenses for 1913; this is as near as can be estimated, and is made after very careful study of this system since its inception.

In preparing this statement it is assumed that the same rates for tickets is maintained as at the present time, viz.:—cash fares, 5c. straight, 5c.; red tickets, 6 for 25c, 4 1-6c.; yellow tickets, 8 for 25c., 3⅛c.; green tickets, 12 for 25c., 2 1-12c.; blue tickets ($1 books), 4c.

You will notice from this statement that probably at the end of 1913 we will show a profit of $16,163.00; the statement shows, however, that for seven months of the year a deficit will be recorded; during the summer months, in May, June, July and Aug. a good profit will be shown, and this profit more than makes up the deficit of the remaining months, leaving a fair sized balance. It would appear from this as if the prospects for 1913 are not any too reassuring. We will possibly come out all right, but we have no reserve nor anything left over for depreciation and contingent fund. The question arises, "Is it advisable to continue in the present manner?" The cost of labor and material is advancing

Month.	Receipts.	Expenses.	Profit.	Deficit.
January	$46,000.00	$49,297.25	$	$3,297.25
February	44,000.00	47,647.25	......	3,647.25
March	50,000.00	50,747.25	......	747.25
April	55,500.00	59,067.25	......	3,567.25
May	65,500.00	60,347.25	5,152.75	
June	68,000.00	61,647.25	6,352.75	......
July	75,000.00	67,747.25	7,252.75	......
August	90,000.00	77,347.25	12,652.75	
September	73,000.00	74,267.25	......	1,267.25
October	77,500.00	76,527.25	972.75	......
November	78,000.00	79,947.25	......	1,947.25
December	80,000.00	82,247.25	......	2,247.25
			$32,383.75	$16,720.75

[illegible]

THE RATES [illegible]

[illegible]

[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
Total	[illegible]

SUGGESTIONS FOR INCREASING RE- [illegible]

[illegible]

Questions and Answers on Miscellaneous Electric Railway Subjects.

[illegible]

[illegible] gineer of Construction, British Columbia Electric Ry.:—"We have taken out untreated fir ties which have been embedded in con- [illegible] tion as when first put in."

[illegible] be used between rails? C. B. Vorce, Engineer of Construction, British Columbia Electric Ry.:—"The only paving material that will stand next to the rail is two rows of concrete. We have found granite sets the most durable pavement between the [illegible]

[illegible] considered the best in getting rid of weeds on the track, and about what is the cost [illegible] and how often is it necessary during a year to weed? J. D. Evans, Construction Engineer, Electric Bond and Share Co., New York, formerly Chief Engineer, Montreal [illegible] on the track should be cut down with a [illegible] rails and at least 3 ft. outside. The weeds should also be removed about Aug. 1. The [illegible] the last of June and again the last of Sept., [illegible] is, of course, the ideal condition, but gives [illegible]

[illegible] BEARINGS.—How can the peening of armature bearings best be accomplished? Will peening in- [illegible] a jig prior to boring out. The [illegible]

[illegible] effectual in overcoming that condition? W. [illegible] "We have experienced very little trouble from shoulder bolts breaking in motors, [illegible] broken bearing cups. Our remedy for this [illegible] bolt suspension bar solid to truck side frame [illegible] in both double and single trucks, springs with ample deflection to allow for all twisting motion between axles and truck side frames, care being taken not to tighten hanger bolt to such an extent as to interfere with free spring movement. This practice has been very successful in stopping breakage of bearing cups, and no doubt will assist in overcoming the breaking of shoulder bolts."

Niagara Gorge Railroad Company.

[illegible] from Niagara Falls to Lewiston, N.Y., is 6.83 miles long, with 1.07 miles of switches. It [illegible] Youngstown and Fort Niagara, N.Y., and has trackage rights on one mile of the International Ry.'s double track in Niagara [illegible]

The gross earnings for the year ended [illegible] decrease of 0.175%; net earnings from opera- [illegible] terest, rentals, etc., amounting to $8,132.84 [illegible] Division, amounting to $4,039.84, making a [illegible] which, after being deducted from the total [illegible] 390.56 which has been added to surplus.

[illegible] carried on the Niagara Gorge Division during the year was 507,953, the average rev- [illegible] during the previous year at an average rev- [illegible] enue passengers carried on the Lewiston [illegible]

Moose Jaw Electric Railway Traffic Statistics.

[illegible] The following [illegible]

Months	Total Car Earnings	Average No. Cars in Use	Average Earnings per Car Mile	Passengers Carried
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	104,814
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

British Columbia Electric Railway Employes' Luncheon Club.

[illegible] for less than one week. From 100 to 125 [illegible] operations, and it is probable that the membership will grow now that the organization has been successfully launched. The management of the club is vested in a committee of five selected by the members, a representative of the company's management and a representative of the social club. The only labor employed by the club is a cook and his helper, the luncheon being arranged on the cafeteria plan, each member waiting upon himself. The result of the first week's operations was a deficit of $12, but on the second week this was turned into a balance of $6, thus demonstrating that it is possible to work out the objects for which the club was organized.

The members of the staff generally agree that the project is a good one, as the luncheon club affords the members an opportunity of securing a substantial mid-day meal at a moderate price, the food and service provided being far better for the money than it is possible to obtain at public dining places in the city. One of the best results of the luncheon club is that it brings the men who usually meet each other only hurriedly and in a business way, to the club quarters, where they meet round the dining table in social intercourse and thus become better acquainted with each other. The provision made by the club of reading room, billiard room, social hall, etc., adjoining the dining room, makes the after dinner gatherings to the various quarters [illegible]

Prohibition of Intoxicating Liquors on Electric Cars.

The Dominion Power and Transmission Co., Hamilton, Ont., which controls the Hamilton St. Ry., Hamilton and Dundas St. Ry., Hamilton Radial Electric Ry., Hamilton, Grimsby and Beamsville Electric Ry., and Brantford and Hamilton Electric Ry., has amended its bylaw regulating travel on cars by adding a clause prohibiting the drinking of intoxicating liquors. The bylaw as amended and which has been approved by the Board of Railway Commissioners and the Ontario Railway and Municipal Board, is as follows:—

[illegible] Smoking [illegible] a lighted pipe, cigar or cigarette, except while in smoking compartments provided for that purpose, or except on the three rear seats of open cars only, or expectorating [illegible] is hereby forbidden and declared unlawful, and any person found guilty of a violation of this rule shall be liable to a penalty not exceeding $5.

[illegible] hereby forbidden and declared unlawful, and any person found guilty of a violation of this rule shall be liable to a penalty not exceeding $10.

"2. Passengers other than policemen in uniform, city detectives and company officials shall not be allowed to ride on the front platform of any closed car, nor to ride on the rear platform of any closed car when there is room or space which may be occupied by them inside the car, and women or children shall not ride on the front platform or seat of any open car, and passengers refusing to comply with this rule shall be considered disorderly persons and subject to a penalty in the violation of this rule not exceeding $10, and may also, on such refusal, be ejected from or put off the car.

"3. The conductor must politely call the attention of passengers violating, or who appear to intend to violate, the last two rules herein set forth, to the provisions of the said rules and firmly request observance thereof before taking any further or other action."

British Columbia Electric Railway's Victoria-Saanich Line.

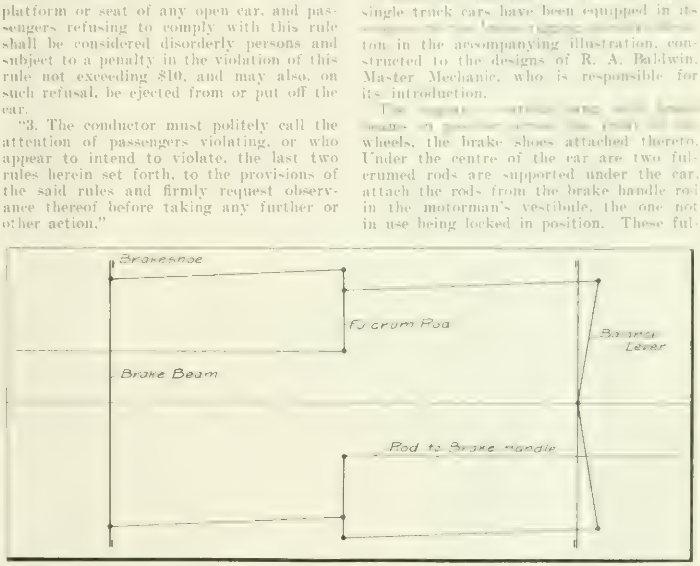
The interurban line from Victoria to Deep Cove, which will be placed in operation May 15, extends from the City of Victoria, for 23 miles to the north. It passes through the centre of the Saanich Peninsula, which is an arm of land at the south eastern corner of Vancouver Island, with the Gulf of Georgia on one side and the Saanich Inlet on the other. The district is capable of great development as an agricultural centre and also provides admirable facilities for the location of surburban homes. The Victoria press unites in stating that the opening of the district by the interurban line will do more to advance the growth of the country surrounding Victoria than could be done in any other way. The line will be the second largest interurban line operated by the B.C. Electric Ry., the longest division of the company's system being that from Vancouver to Chilliwak, 76 miles. The B.C.E.R. Co. controls several large holdings along the route of the new line, which will be developed as model town sites. It is also probable, as the dis- [illegible] route.

The rolling stock, which has been al- [illegible] posed to inaugurate the service by the op- [illegible] have been allotted for about 20 stations, located about a mile apart. Shelter struc- [illegible] provided at each of these points.

Ottawa Electric Railway Brake Rigging.

[illegible] single truck cars have been equipped in its [illegible] ton in the accompanying illustration, constructed to the designs of R. A. Baldwin, Master Mechanic, who is responsible for its introduction.

[illegible] wheels, the brake shoes attached thereto. Under the centre of the car are two fulcrumed rods are supported under the car, attach the rods from the brake handle rod in the motorman's vestibule, the one not in use being locked in position. These ful- [illegible] but not fastened in position. Rods from the ends of the brake beams attach to the other end of the fulcrum lever. One of the brake beams has mounted on its back a balance lever fulcrumed on the beam at the centre, and to the outer ends of which the rods from the central fulcrum rod attach, instead of directly to the brake beam as at the other end. By this means, a balance is maintained in the rigging, regardless of the position in which the off brake handle is locked. Its use has been most satisfactory.



Ottawa Electric Ry. Outside Hung Brake Rigging.

The New Brunswick Legislature has extended the powers granted to the St. Stephen Electric Ry. Co., in its charter, so as to enable it to generate electric power and to dispose of same for commercial purposes.

The Guelph, Ont., City Council is applying to the Ontario Legislature for authority to place the operation of its various public utilities, comprising the supply of water, gas, electric light, heat, sewage disposal, public works generally, and the Guelph Radial Ry., under a single commission.

Public Construction and Operation of Electric Railways in Ontario.

On Apr. 6, Hon. Adam Beck introduced a bill in the Ontario Legislature to provide for the construction and operation of electric railway lines in connection with the Hydro Electric Power Commission's power transmission lines. It is of such importance that it is given here in full, as follows:—

1. This Act may be cited as The Hydro Electric Railway Act.

2. In this Act, "Commission" shall mean The Hydro Electric Power Commission of Ontario. "Corporation" shall mean a municipal corporation, other than the municipal corporation of a county.

3. Whenever required by the Lieutenant-Governor in Council so to do the Commission may enquire into, examine, investigate and report upon (a) The cost of constructing and operating an electric railway, in any locality in which electrical power or energy may be supplied by the Commission under The Power Commission Act; (b) The municipalities, the inhabitants of which will be served by such railway; (c) The population of each of such municipalities as shown by the last enumeration thereof by the assessors; (d) An estimate of the probable revenue from the railway; (e) The practicability of the undertaking and its economic value to the locality to be served by it.

4. (1) A corporation or two or more corporations may, if authorized by the Lieutenant Governor in Council so to do, enter into an agreement with the Commission for the construction, equipment and operation of an electric railway to be operated by electrical power or energy supplied by the Commission. (2) The agreement may provide for, (a) The location of the line of the railway; (b) The character of the equipment and service to be furnished and the maximum tolls or fares to be chargeable thereon; (c) The proportion in which the cost of construction, equipment, maintenance and operation of the railway shall be borne by each of the corporations interested; (d) The issuing of debentures of the corporation or of each of the corporations for raising the amount of such cost; (e) The proportion of the revenue from such railway to be paid annually by the Commission to each corporation after deducting the charges hereinafter mentioned; (f) The construction of the railway upon any right of way acquired by the Commission for the transmission of electrical power or energy under The Power Commission Act and the amount chargeable to the railway by way of rental or otherwise for the use of such right of way. (3) Instead of providing for the construction and operation of the railway by the Commission, the agreement may provide for its construction by the Commission and for its operation by the corporation, or for its construction and operation by the corporation or corporations, and in either case for the supply by the Commission of the electrical power requisite for the operation of the railway on such terms and conditions as may be agreed on between the corporation or corporations and the Commission. (4) Where the railway is to be constructed and operated by the corporation or corporations, the Commission may agree with them to permit the railway to be constructed upon the right of way or other lands of the Commission on such terms and conditions as may be agreed on. (5) The agreement shall not come into effect until it has been sanctioned by the Lieutenant Governor in Council and has been approved by bylaw passed with the assent of the municipal electors of each municipality.

5. (1) The council of every corporation entering into an agreement with the Commission under this act shall annually raise and pay over to the Commission such sums as may be required by it in the construction, equipment, maintenance and operation of the railway including the costs of the supply of electrical energy to the extent and in the proportions fixed by the agreement and for that purpose may issue debentures of the corporation payable in not more than 40 years from the date of the issue thereof. (2) It shall not be necessary to obtain the assent of the electors to the passing of any bylaw for incurring a debt under this section.

6. Where the agreement provides for the construction and operation or for the operation of the railway by a corporation or by two or more corporations it shall also provide for the management of the railway and its operation by a Public Utilities Commission to be approved by the Lieutenant Governor in Council, and it shall provide as to the mode of appointing the members of the Commission and for the proportions in which each corporation shall contribute to the cost of its construction, maintenance and operation and for the proportion in which each of them shall share in the income, revenue and profits derived from the operation of the railway, and such corporation or corporations or Commission shall have the right to construct and operate the railway notwithstanding that it does not lie wholly within one or more of the municipalities, the corporations of which have entered into the agreement.

7. A Public Utilities Commission appointed under the provisions of the next preceding section shall have all the powers and perform all the duties of a Public Utilities Commission appointed under The Public Utilities Act.

8. Subject to the provisions of sec. 5, where an agreement has been entered into under sec. 4, the Commission may construct, complete, equip, maintain, and operate the railway therein provided for, and for that purpose shall have and may exercise the powers of a company incorporated by special act for the construction of such a railway under the provisions of The Ontario Railway Act, so far as the same are applicable.

9. Where land is required for any of the purposes for which land may be acquired or expropriated under The Ontario Railway Act, the Commission in respect thereof shall have the powers and shall proceed in the manner provided by The Public Works Act, where the Minister of Public Works takes land or property for the use of Ontario, and the provisions of the said act, shall, mutatis mutandis apply.

10. The Commission shall apply the revenue derived from the operation of the railway to the payment of working expenses of the railway and after payment of the same shall annually pay over the balance, if any, to the corporations, parties to the agreement in the proportions fixed thereby.

11. All sums received by the corporation or corporations shall be applied in the first place in the payment of the principal and interest of any debt incurred under the authority of this act in the manner prescribed by the Commission.

12. Secs. 68 to 97 of The Ontario Railway Act shall not apply to the Commission or to any railway constructed or operated by it.

13. Secs. 8 to 12 shall apply only where the agreement provides for the construction of the railway by the Commission.

14. No action or prosecution shall be brought against the Commission or any member thereof or any of its officers under The Ontario Railway Act without the consent of the Attorney General of Ontario.

15. Neither the Province nor the Commission nor any member thereof shall incur any liability by reason of any error or omission in any estimates, plans or specifications prepared or furnished by the Commission.

16. Every railway and the works, property and effects held and used in connection therewith, constructed, acquired, operated and maintained by the Commission under this act shall be vested in the Commission in trust for the corporations' parties to the agreement for the construction and operation of the railway.

Moose Jaw Electric Railway Finances, Extensions, Etc.

To meet expenditures for plant extensions and equipment during the past year, having in mind additional expenditures of the same nature in the immediate future, and for the purpose of providing working capital for increased operations, the directors decided recently to issue $125,000 of stock, in addition to the $500,000 previously issued, and offered the same to shareholders at $95 a share, in the proportion of one new share for every four shares held. In view of the possibility that some shareholders might not take up the new stock offered, it was decided to receive from shareholders applications for shares in addition to those they were entitled to, the result being that the issue was largely oversubscribed.

The directors have, in view of satisfactory earnings, decided to pay a quarterly dividend for this year at the rate of 6% per annum. The first payment of 1½% was made April 1.

The company has recently installed a Mirless Diesel oil engine of the enclosed type, capable of developing 465 b.h.p. at Moose Jaw's altitude, when running at 2 r.p.m. Also an interpole wound generator, 275 k.w., 550 volts no load, and 600 volts full load. The order also included one spare armature and two spare volt coils.

A large addition to the car ban which was in course of erection collapsed recently and is being rebuilt.

British Columbia Electric Railway Track Extensions.

In Victoria a line will be built from Pandora Ave., along Quadra St. to Bay St., and thence easterly to Shelbourne St., the route serving the surburban section of the city which is now rapidly developing.

In South Vancouver an extension of the track on Westminster Road nearly a mile long will be laid, provision being made for further extending the line along Westminster Road to the limits of the municipality in the future. This track will be of permanent type and will be laid in connection with permanent pavement which will be constructed this year.

Another extension to the line in South Vancouver which is planned for this year is a line connecting the South Vancouver lines with the city line, terminating at Cedar Cottage, in the extreme south eastern part of Vancouver. This line will run from Westminster Road to Cedar Cottage and will be nearly a mile long.

Electric Railway Projects, Construction, Betterments, Etc.

Amherstburg to Kingsville, Ont.—Press reports state that a United States syndicate has under consideration the construction of an electric railway along the Edison power line, from Amherstburg to Kingsville, Ont. The line would follow the Lake Erie shore through Masonic Park at Bar Point, and would serve a number of summer resorts.

Aroostook Valley Ry.—Press reports state that location surveys are being made from Washburn, Me., westerly to the International Boundary between Maine and Quebec, and that construction will be started at Washburn during the summer. This line is projected, with others in New Brunswick and Quebec, to give a short line between St. John, N.B., and Quebec. The entire project is known as the St. John and Quebec Ry., and the section of the line from St. John to Great Falls, N.B., is under construction. Power for the operation of the line in Maine will be obtained from the Maine and New Brunswick Power Co. at Aroostook Falls, Que.

Berlin and Northern Ry.—The Berlin, Ont., City Council's special committee informed the committee of the Wilmot and Waterloo townships council, that the city will not submit another bylaw to aid in the construction of the line by a guarantee of bonds and a grant of $6,000 towards the construction of a bridge. It is said that another proposal will be submitted for consideration. (Dec., 1912, pg. 622.)

British Columbia Electric Ry.—Grading on the line connecting Port Moody and Coquitlam, B.C., is practically completed. The line will be operated for some time at any rate by steam, and will be used at first to get in the machinery for the Vancouver Power Co.'s new plant.

The company's chief engineer has submitted to New Westminster City Council plans showing the work necessary to install a loop system of car operation.

Arrangements are being made for the erection of a new substation in South Vancouver at a cost of $90,000. The equipment will consist of three motor generator sets of 1,000 k.w. capacity each, and a transforming equipment of 7,000 k.w. capacity.

The company recently submitted to the Victoria City Council plans showing a number of proposed extensions. The present city and suburban system consists of 36 miles of track, of which 8.7 miles were laid last year. The extension to Saanich, 22.5 miles, has been completed, and arrangements are being made for yards and stations. (April, pg. 185.)

Calgary Municipal Ry.—The estimated expenditure on electric railway construction for the year includes $510,149 on the completion of lines, and $127,469 on sub base work on streets for further extensions. (Feb., pg. 90.)

Cape Breton Electric Co.—Press reports state that it is proposed to expend $350,000 on building a second track on existing lines, and putting in additional sidings; enlarging the car barns and adding to the power plant at Sydney; and providing an auxiliary steam plant at North Sydney, N.S. (Feb., pg. 90.)

Chestermere and Calgary Suburban Ry.—An extension of time has been granted by the Alberta Legislature for the construction of this projected electric railway. The authorized capital has also been increased from $250,000 to $750,000, and the company's bonding powers have been increased from $12,000 to $20,000 a mile. (Mar., pg. 141.)

Edmonton Radial Ry.—Plans have been approved by Edmonton, Alta., City Council for building 10 miles of electric railways in certain suburbs. These lines will be built on the local improvement plan and by private owners and the city is to be guaranteed against loss in operating them for two years. The first line to be built will be from Highlands east to Beverly Heights, about two miles. (Mar., pg. 141.)

Forest Hill Electric Ry.—The Ontario Legislature has incorporated a company with this title to build lines on Bathurst and Dundas Streets, north of Forest Hill Road, and along Forest Hill Road to St. Clair Ave., where a connection may be made with the Toronto civic car line. (April, pg. 185.)

Fredericton St. Ry.—Plans have been prepared, press reports state, for the building of a five mile electric railway to connect Fredericton, St. Marys, Gibson and Marysville, N.B. (July, 1910, pg. 584.)

Humber Valley Electric Ry.—Plans have been filed with the Ontario Railway and Municipal Board for this projected railway, which will extend from the extension of Bloor St., where it crosses Dundas St., near Islington, southerly to the Lake Shore Road, following the Humber River. The maximum gradient will be 2%, and the sharpest curve a radius of 150 ft., which will be at the subway on Queen St. The plans have been approved, and it is reported that construction will be started at once. The City of Toronto, which is interested in the development of the property to some extent, proposes to submit a bylaw to the taxpayers to secure authority to acquire the line, or to provide the money for its construction and operation as part of the city system. R. Home Smith, Toronto, is the principal promoter. (Feb., pg. 90.)

Lethbridge Municipal Ry.—The Lethbridge, Alta., City Council is considering a proposal to build an extension to No. 6 Mine, and Hardieville, two miles, during the summer. The city has $10,000 worth of material on hand, and would only require to purchase the steel rails. (April, pg. 185.)

Lethbridge Radial Tramway Co.—The Alberta Legislature has authorized the City of Lethbridge to build the following lines:—From Lethbridge to Raymond; from Lethbridge to Stafford; from Lethbridge to ten named points in Tps. 9 and 10, Ranges 20, 21 and 22, west of the 4th Meridian.

Montreal and Southern Counties Ry.—Negotiations, which have for their object the securing of a terminal station in Youville Square, Montreal, are reported to be nearly completed. With the approval of the City Council the company proposes to erect a station 70 by 300 ft., and to pave the square. (Mar., pg. 141.)

Morrisburg and Ottawa Electric Ry.—Negotiations are being carried on with the Brockville, Ont., City Council with a view of extending the projected line to that point, and building a city system. A committee of citizens has been appointed to consider the matter. J. J. Kilt, Ottawa, is President. (Mar., pg. 141.)

Niagara, St. Catharines and Toronto Ry.—The Dominion Parliament has extended the time within which the company may build the lines authorized by paragraphs b., c. and d., Sec. 1, Chap. 132 of the statutes of 1906, and by Sec. 8, Chap. 77 of the statutes of 1909.

The Board of Railway Commissioners has approved revised location plans for the extension from St. Catharines to Niagara-on-the-Lake, Ont., mileage 8.7 to 11.1. (Mar., pg. 141.)

Niagara, Welland and Lake Erie Ry.—Material is reported to be on hand for starting construction on the company's lines. The projected lines extend from Niagara Falls to Welland and Port Colborne, and thence east along the lake front to Fort Erie, Ont. Some extensions in Welland are also contemplated. T. R. Cummings is reported to have been engaged as Chief Engineer. C. J. Laughlin, Welland, Ont., is General Manager. (Feb., pg. 90.)

Ottawa Electric Ry.—Press reports state that the company proposes to construct a second track on Creighton St., between St. Patrick and Sussex Streets, 1.50 miles, to be laid with 75 lb. steel. (Feb., pg. 90.)

Ottawa, Rideau Lakes and Kingston Ry.—Following are the officers and directors for the current year:—President, N. M. Clougher, London, Eng.; directors—Hon. W. Dennis, R. H. McElroy, H. D. Ball, G. L. Dickenson. Surveys for the line are reported completed, and negotiations are said to be well advanced for financing construction. (Oct., 1912, pg. 521.)

Quebec Ry., Light and Power Co.—It is reported that the extension of the line to Limoilou, Que., will be built, now that the Drouin bascule bridge across the St. Charles River has been opened. (Sept., 1912, pg. 468.)

Regina and Moose Jaw Interurban Ry.—We are officially advised that it is intended to start construction on this projected line from Regina to Moose Jaw, Sask., 43 miles, early in the summer and to have it opened for traffic, by the fall 1915. Self generating gas electric cars will be used, and a freight and passenger business will be done. The line will pass through Grand Coulee, Pence and Belle Plain. The provisional directors are:—G. A. McCallum, W. P. Wells, J. G. Boyd, Regina, Sask.; A. Hitchcock, J. H. Grayson, Moose Jaw, Sask.; J. Friedman, Saskatoon, Sask.; W. B. Lawson, Chesterville, Ont. (Apr., pg. 185.)

Regina Municipal Ry.—The street railway committee of the Regina, Sask., City Council, is considering plans for the extension of its electric railway lines for 1914. It has been decided to build a second track on Victoria St., from Broad to Albert St., and to extend the Thirteenth Ave. line across the creek to the C.P.R. Annex. (April, pg. 185.)

St. John Ry.—The New Brunswick Legislature authorized the company to extend its lines throughout Kings county, subject to agreements being made with the highway boards of the different parishes. (Apr., pg. 185.)

St. John Suburban Ry.—The New Brunswick Legislature has incorporated a company with this title to build single or double track railway lines from the Suspension bridge at St. John, to different points in the parish of Westfield; to Spruce Lake, Loch Lomond, and from the parish of Simonds, within the city of St. John to points in the parish of Rothesay; electricity, gasoline, steam or any other motive power to be used for operating the cars. The municipal authorities of the parishes within which the company has power to build lines, may make agreements with the company granting the use of highways, bridges, etc., and such agreements shall run for 40 years. The operation of the company in St. John shall not interfere with any exclusive privilege granted to the St. John Ry., and the company is debarred from taking fares within certain areas in St. John. The company has to spend $50,000 on construction before Jan 1, 1914;

[illegible] W. Doherty, C. F. Inches, D. K. Hazen, St. [illegible]

Local press reports state that the following lines are projected under the provisions of the act:—To Loch Lomond, 10 [illegible] wick Hydro Electric Co., which is propos[illegible] Cushman is President of the Merrill Trust [illegible]

[illegible] project held in St. John, April 4, the com[illegible] being elected directors:—J. R. Graham, H. W. Cushman, M. W. Doherty, H. P. Robinson, J. M. Robinson, P. W. Thomson.

St. Stephen Electric St. Ry.—The New [illegible] company to generate electric power and to [illegible]

Saskatoon Municipal Ry.—[illegible] Sask., City Council has accepted the offer of a real estate syndicate to build a line from Saskatoon to Sutherland, by way of 8th St., and to hand the same over to the city for operation. The contract, which was signed April 10, is with the Saskatoon and Sutherland Contracting Co., and calls for the completion of the line by Aug. 15. E. Hanson, electrical engineer, prepared the [illegible]

Stratford Ry.—The Ontario Legislature has extended the time for building this line. [illegible] Northern Ry. for a [illegible] paragraph 15 of bylaw 1932, known as the "power clause," and prohibits the carrying [illegible]

Toronto and York Radial Ry.—The Ontario Legislature has authorized the com[illegible] municipal authorities interested, to build lines connecting the Metropolitan Division [illegible]

[illegible] under the franchise agreement. [illegible]

Toronto Eastern Ry.—We are officially [illegible] 1912. A branch line from the Toronto Eastern main line to the Canadian North[illegible] Whitby [illegible] and between Whitby and Pickering a little over 50%, or, on the whole line between Bowmanville and Pickering, about 65% of the grading, and the Oshawa spur, which is about 2 miles long, has been completed. The track on the Oshawa spur is practically all laid and about a mile has been laid on the Toronto Eastern main line through the [illegible] start tracklaying on the Toronto Eastern main line during May. There is very lit[illegible] more than 4 degrees, with one curve of 10 [illegible] gradient of not more than 2.7%. The formation of the country is very rolling, and [illegible] reasonable gradient at ordinary cost that the Canadian Northern Ontario Ry. is located further north.

Toronto Suburban Ry.—Work is expected [illegible] May 1 [illegible] West [illegible] Ave.

Plans have been filed showing the proposed route of the Weston-Woodbridge line, now nearing completion, from Weston into [illegible] at the intersection of Davenport and Weston Roads, through the Silverthorn Heights [illegible] C.P.R. and G.T.R. for two miles to Weston, and thence on to the Chew farm near the C.P.R.

[illegible] Lambton to Guelph at several points. Preparations are being made for putting in a subway under the C.P.R. at the Mimico River, a short distance east of Islington station, for which the Board of Railway Commissioners approved plans April 12. It is expected to get the line ready for opening as far as Cooksville by the end of summer. West of Cooksville, S. Mackenzie and A. Kee, are grading some miles in the direction of Meadowvale. The principal work, [illegible] being done directly by the general contractor, Ewen Mackenzie. The right of way is reported to have been secured for the entire distance into Guelph, although the price to be paid has not in all cases [illegible] Dec., 1912, pg. 623.

Vancouver Island Hydro Electric and Tramway Co.—Press reports state that construction will shortly be started on an electric line from Nanaimo to Nanoose, and on another from Nanaimo to Departure Bay, on Vancouver Island, B.C.

White Pass to Dawson, Y.T.—We are officially advised that the owners of the railway and steamers, etc., operated as the White Pass and Yukon Route, are not interested in any negotiations reported to be in progress for the building of an electric railway from White Pass to Dawson, Y.T. (April, pg. 186.)

Height of Electric Railway Car Steps.—The Public Service Commission, First District, New York State, considered recently various complaints received from some of the women's clubs in regard to the high step necessary in entering many of the surface cars in New York City. The following [illegible] was given: "In view of the fact that it seems unlikely that any new cars will be ordered for use in the City of New York with high entering steps rather than [illegible] steps no order need be made to [illegible] the height of steps on any such new equipment. Under the circumstances stated it seems advisable to make an order requiring the New York Railways Co. and all of the companies of the Brooklyn Rapid Transit Co.'s system, on or before Jan. 1, 1914, to reconstruct all of their closed cars for passengers, so that none of the steps will be more than 15 ins. from the ground, and requiring the New York and Queen's County Ry., the New York and Long Island Traction Co., and the Long Island Electric Ry., on or before Jan. 1, 1914, similarly to reconstruct 50% of their closed equipment; and the remainder of such closed equipment on or before Jan. 1, 1915."

Edmonton Radial Railway Co's Extensions, Betterments. Etc.

[illegible] port of W. T. Woodroofe, Superintendent, [illegible]

[illegible]

[illegible] 15 to 20 cars, which will be designed so that [illegible]

[illegible] Edmonton, Alta. We are officially advised that the following permanent track work has been decided on for this year:—

[illegible]

[illegible]

The following rolling stock will be added [illegible] semi convertible p.a.y.e. cars ordered from [illegible] 5,000 gal. sprinkler car, ordered in the U. S.; 1 line car to be built in the company's shop.

The Electric Railway Situation in Montreal.

A conference was held, April 17, between E. A. Robert, President, Montreal Tramways Co., and the City Board of Control, with respect to the best way of improving street car conditions in the city. In an interview subsequently, Mr. Robert said the interview had been satisfactory, but that until the matters which had been discussed had been considered by the directors, no announcement could be made. It was reported that the suggestions favorably considered include, in addition to the rearrangement of some existing routes, the establishment of some new routes; and the provision of additional cars. These matters refer entirely to the question of the relief of existing congestion; the question of providing for future developments being left for further discussion.

The present congestion of traffic in Montreal has been the subject of considerable discussion for some time. Three experts were engaged by three of the city newspapers to make reports. These reports have been prepared by J. P. Fox, of New York, for the Montreal Star; D. McDonald, formerly General Manager, Montreal Tramways Co., for the Montreal Herald, and A. J. Lavoie, for La Presse. The City Council referred these reports to the City Engineer, and its railway engineer, April 12, for consideration and report.

We gave on pg. 188 of our last issue a summary of J. P. Fox's preliminary report. The complete report has now been issued. It points out that the questions now at issue should be settled, before anything is done in the way of discussing a new contract. The relief of overcrowding must not be confused with other questions. The various suggestions made in the preliminary report are discussed in detail.

A. J. Lavoie, in his report, makes suggestions for the relief of congestion at the rush hours; suggests a new type of car; the double tracking of Notre Dame St.; the building of new lines so as to give additional routes, and the construction of subways, so as to make the connection between certain lines possible.

D. McDonald's report has not been made public.

Ontario West Shore Ry. Investigation.

A report by H. W. Middlemist, A.M I.C.E., of Toronto, upon the condition of the partly built O.W.S.R., was published in Canadian Railway and Marine World for April. The situation appears to be that in 1906, J. W. Moyes, of Toronto, who has on several occasions been employed by the City of Toronto, the Toronto Board of Trade, and as "an expert" on transportation questions, secured control of the line and induced the towns of Goderich, Kincardine, Ashfield Tsp. and Huron Tsp. to guarantee bonds to the extent of $400,000 to build the road. About 14 miles of line from Goderich were built and rails laid, but little or no work has been done for the balance of the distance to Kincardine. The entire $400,000 has been absorbed, and Mr. Moyes has apparently abandoned the road. Nothing was done on it last year. Mr. Moyes is said to claim that $639,000 has been spent upon the enterprise up to date.

The municipalities employed Mr. Middlemist to make a report on the cost of completing the road as intended, and what amount had been expended upon it. According to his report less than $300,000 has been put into the line.

The Ontario Railway and Municipal Board has received applications from each of the four municipalities to investigate the affairs of the company, which can be done under legislation of last session. An appointment would have been issued some time since, but Mr. Moyes' solicitors asked for some delay, it being said that he was in the Southern States. It was announced, April 16, that an appointment would shortly be taken out and the whole situation investigated by the board.

Meanwhile the company is in default in payment of interest on the bonds. To protect the interest of the municipalities a bill was introduced into the legislature April 16 to vest in trust for the municipal corporations that have guaranteed the bonds, subject to the rights of the bondholders, the interests of the company.

Halifax Electric Tramways Co. Legislation

The Nova Scotia Legislature has had under consideration for some time two bills affecting the H.E.T. Co.'s interests. The first is an application of the City of Halifax for authority to acquire the company's property and franchises on securing authority to do so from the citizens. The second part of the bill provides that the price to be offered shall be $2,980,000, being the amount of the bonded indebtedness, $600,000, and $170 a share for the common stock. In the event of this amount not being accepted by the shareholders then the price to be determined by arbitration. The third part of the bill provides for the formation of a commission to operate the railway and other properties to be required.

The second bill is an application of E. A. Robert, J. W. McConnell, W. G. Ross, F. H Wilson, Montreal; O. E. Smith, W. M. P. Webster, H. H. Smith, J. E. Wood, J. A. Neville, Halifax, N.S.; Sir Frederick Borden, Canning, N.S.; P. J. McIntosh, New York, for the incorporation of the Halifax Tramways and Power Co., having for its object the purchase, leasing or construction of tramways and street railways within the province; the development of water powers, and the distribution of electric energy for all purposes. The bill provides for the purchase of the Halifax Electric Tramway and Power Co., subject to certain conditions.

After having been discussed for some time by the Committee on Railway and Municipal Legislation, it was decided, April 16, to recommend the Legislature to read both bills that day three months; in other words, to kill them for the session.

The British Columbia Electric Railway in Burnaby Municipality.

The Burnaby Municipal Council submitted to the voters on April 26 a tram franchise bylaw in favor of the British Columbia Electric Ry. Co. The bylaw provides that the company shall construct extensions of its lines on Hastings St., east from Vancouver, and an extension of its New Westminster city lines along the North Road. The term of the franchise will be about 36 years, the general terms of the agreement being similar to the agreement under which the company now operates its systems in South Vancouver and Point Grey municipalities.

The B.C.E.R. was granted a 40 year franchise in Burnaby by the municipal council in 1909. With the passage of this measure the company built a line passing through Burnaby and connecting Vancouver with New Westminster, this line being now in operation. In 1911 a question was raised as to the validity of the company's franchise in Burnaby, because of the fact that the agreement was not ratified by the voters. The question was taken into the British Columbia courts, and last year Mr. Justice Murphy decided that the franchise was valid. Notice of an appeal from the decision of the B.C. court to the Privy Council has been given by the municipality. In the meantime negotiations were carried on which have resulted in the forming of another franchise. The passage of the measure will naturally result in the municipality abandoning its appeal to the Privy Council. Should the measure be defeated the company will press before the Privy Council for a decision that its franchise granted in 1909 is valid.

The municipality of Burnaby is developing very rapidly and the district touches both Vancouver and New Westminster, and suburban settlement for these cities is steadily advancing from either boundary. The terms of the tram agreement now proposed by the B.C.E.R. Co. would do much to assist in the development of the district.

Toronto and York Radial Railway Arbitration.

The Ontario Railway and Municipal Board delivered judgment in the arbitration between the company and the City of Toronto, Apr. 7, in the matter of the taking over by the City of the portion of the Toronto and York Radial Ry., built under the franchise granted to the Toronto and Mimico Ry. and Light Co., and situated within the city limits, together with certain land, buildings and appurtenances. The award is based on a report made to the Board at the instance of the company and the City, by W. P. Kellett, and places a value of $79,245.07 on the property to be taken over by the City. No order was made as to costs, but the City is required to pay $500 for the engineer's fee for the report, the cost of law stamps being divided between the City and the company.

2600
1380
170
1185
6335

Nipissing Central Railway Report for 1911-12.

The report of the operations for the year ended Oct. 31, 1912, is contained in the report of the Timiskaming and Northern Ontario Ry. Commission, by which the line is operated for the Ontario Government.

The revenue from transportation was $53,170.44, of which $52,747 were passenger fares; the miscellaneous revenue was $691.25, making a total revenue of $53,861.69. The expenditures were: Maintenance of way and structures, $4,911.82; maintenance of equipment, $2,041.07; traffic expenses, $504.96; transportation expenses, $23,583.80; general expenses, $2,785.63; total, $33,827.28. The net revenue was $20,034.41.

Traffic statistics:—Passenger car hours, 14,413; passenger car miles, 144,131; passengers carried, 723,203; average daily receipts, $145.27; average receipts per car hour, $3.69; average receipts per car mile, $0.37.

General balance sheet:—Assets, $594,523.25, made up of value of line and equipment, $186,123.74; value of North Cobalt townsite property, $252,095; working assets, $35,707.05; franchise, $120,597.46. Liabilities:—Capital stock, $530,000; working liabilities, $33,157.63; deferred credit item, $7.50; profit and loss, free surplus, $31,358.12. This latter sum is made up of the balance at Oct. 31, 1911, of $10,978.11; net revenue for 1911-12, $20,034.41; received from townsite, $345.60.

The Street Railway Situation in Toronto.

The proposal for the acquirement by the city of the Toronto Ry., which has been before the public for several years in various forms, was again revived, Apr. 17, after Mayor Hocken introduced the matter to the Board of Control, and subsequently to a special meeting of the City Council. He stated that he had reason to believe that a good opportunity had arisen for the city to purchase the Toronto Ry., and with it the Toronto Electric Light Co., and that the basis for negotiation would probably be the acquirement of the railway stock at 160, and the electric light stock at 135, which latter is the same price at which it was acquired by its present owning company. The special meeting of the council was called to authorize immediate application to the Ontario Legislature for authority under which negotiations for purchase might be carried on, and he asked the council not to attempt any discussion at the moment, as such preliminary negotiations as had been made, had not advanced sufficiently for any public good to be gained by discussion, but he hoped that on the return of Sir William Mackenzie, the President, from England, they would be completed, and a final recommendation on the matter laid before council.

A bill was immediately prepared and introduced into the Legislature the same evening, when it was given its first and second readings. Generally speaking, the bill gives the city authority to purchase the rights and interests of all companies owning or operating street or electric railways within the city limits, including real and personal property, and all the assets, rights and franchises of the Toronto Electric Light Co., and for such purpose to borrow the money by the issue of 40 year debentures without the necessity of submitting the question of the issue to the ratepayers. The debentures are to be secured by a mortgage on all the electric railway and electric light systems owned by the city, including those purchased under the authority of the bill, and the management of the systems is required to be vested in a Public Utilities Commission of not less than three nor more than five members, of whom the mayor, for the time being, shall ex officio be a member.

At a subsequent meeting of the Board of Control, it was decided to withdraw the bill, but on a special meeting of the council being called, the council declined to authorize its withdrawal, and reaffirmed its previous decision. In the meantime an objection had been raised by Hon. Adam Beck, Chairman of the Ontario Hydro Electric Commission, on the ground that the management of the properties by the city would necessitate the continuance of the power contracts between the Toronto Ry., Toronto Electric Light Co. and the Toronto Power Co., for the remainder of the term of the railway franchise, which he claimed the city could not enter into under the terms of its contract with the Hydro Electric Commission, which confines the city to the use of power supplied by the Commission.

The final reading of the bill, which was set for Apr. 21, did not take place, a [illegible] having been adopted. The original bill was almost entirely remodelled, and referred to the Private Bills Committee. A new clause was inserted providing that no agreement for the purchase of the Toronto Electric Light Co. shall be submitted to the electors until it is approved by the Ontario Hydro Electric Commission, and the Lieutenant Governor in Council, and another clause was added prohibiting th amalgamation of the T.E.L. Co.'s properties with those of the Civic Hydro Electric System. The bill was passed Apr. 23, with all reference to the Toronto Electric Light Co. eliminated, the previous legislation giving authority to purchase this company being still in force. It is thus necessary to submit two bylaws to the vote, instead of one as originally intended.

The issue of the whole matter is a subject for considerable speculation, as it is understood that should the companies actually desire to sell, the two properties, the Toronto Ry. and the Toronto Electric Light Co., must be taken over by the city together, while the legislation being promoted is to provide for submitting the taking over of the properties to the ratepayers separately. In such case, it is possible that the decision may be in favor of taking over one and discarding the other, and in that event the whole legislation may prove futile.

Following are some details of the Toronto Ry. Co. and other allied companies:—

THE TORONTO RY. CO. has an ordinary share capital of $11,000,000; first mortgage 4½% bonds of $3,059,940 redeemable in 1921, and 6% debentures of $600,000 redeemable in 1914. It owns outright two thirds, and through a subsidiary company controls the remaining one third of the issued capital stock of the Toronto Power Co.; and owns the whole of the ordinary capital stock of the Toronto and York Radial Ry. Co., and has guaranteed the last mentioned company's bonds for $1,620,000.

THE TORONTO POWER CO. has an authorized share capital of $6,000,000, of which $3,000,000 is issued and fully paid, and which is owned and controlled by the Toronto Ry. Co., and it has £2,857,670 of 4½% consolidated guaranteed debenture stock redeemable in 1941, and £349,347 of 4% debenture stock redeemable in 1918. It owns the entire capital stock of the Toronto Electric Light Co., and 96½% of the ordinary shares, and over 50% of the first mortgage bonds of the Electrical Development Co. of Ontario.

THE TORONTO ELECTRIC LIGHT CO. has an ordinary share capital of $4,000,000, owned by the Toronto Power Co., and also $1,000,000 of 4½% debenture stock redeemable in 1916.

THE ELECTRICAL DEVELOPMENT CO. OF ONTARIO has an issued share capital of $6,000,000, divided into $3,000,000 of preference shares and $3,000,000 ordinary shares, 96½% of which latter is owned by the Toronto Power Co., and there are first mortgage 5% bonds amounting to $9,052,000 redeemable in 1933.

THE TORONTO AND YORK RADIAL RY. CO. has an ordinary share issue of $2,000,000, all of which is owned by the Toronto Ry. Co., and there are $1,620,000 of 5% first mortgage bonds guaranteed by the Toronto Ry. Co.

New Rolling Stock for British Columbia Electric Railway.

The additional rolling stock which will be demanded for the B.C.E.R. Co.'s lines during this year will represent an expenditure of over $750,000. The passenger item consists of 65 passenger cars, an order for which was given the Preston Car and Coach Company during the latter part of 1912, and delivery of which is to be made during the summer. In addition there will be 16 passenger cars for city service. For its interurban lines the company will require 3 additional passenger coaches, 3 baggage and express cars and 2 combination mail cars, the latter probably being built in the company's shops from material now on hand. For the freight service there will be required 50 box cars, 30 flat cars and 25 steel dump cars. The company's plans also call for the purchase of 3 snow sweepers.

During the past month the company received two 50 ton locomotives from the Westinghouse Co., this equipment having been ordered last year. They are of the latest type, and will be used on the Fraser Valley Division of the company's lines.

Electric Railway Finance, Meetings, Etc.

British Columbia Electric Ry.—Gross earnings for Feb., $546,040; operating expenses, $346,052; net operating earnings, $199,988; renewal funds, $51,620; net earnings, $148,368; approximate income from investments, $35,000; net income, $183,368, against $473,036 gross earnings; $290,661 operating expenses; $182,375 net operating earnings; $37,935 renewal funds; $144,440 net earnings; $25,000 approximate income from investments; $169,440 net income for Feb., 1912. Aggregate gross earnings for eight months ended Feb. 28, $4,566,538; net earnings, $1,571,079, against $3,791,667 aggregate gross earnings; $1,339,531 net earnings, for same period 1911-12.

The percentage of earnings paid to the City of Vancouver for Feb., was $3,542.95, against $3,303.67 for Feb., 1912.

Cape Breton Electric Co.—Gross earnings for Feb., $26,141.44; operating expenses and taxes, $17,005.50; net earnings, $9,135.94; interest charges, $4,881.26; balance, $4,254.68; sinking and improvement funds, $1,190; balance for reserves, depreciation, etc., $3,064.68, against $26,693.29 gross earnings; $15,356.19 operating expenses and taxes; $8,337.10 net earnings; $4,495.83 interest charges; $3,841.27 balance; $1,140 sinking and improvement funds; $2,701.28 balance for reserves, depreciation, etc., for Feb., 1912. Aggregate gross earnings for two months ended Feb., 28, $57,976.87; net earnings, $23,210.88; interest charges, sinking funds, etc, $11,894.45; balance, $11,316.43, against $52,020.73 aggregate gross earnings; $19,169.23 net earnings; $11,271.66 interest charges, sinking funds, etc.; $7,897.57 balance, for same period 1912.

Lethbridge Municipal Ry.—The total earnings for March were $4,960.32. Passengers carried during the month, 117,153.

London St. Ry.—Gross earnings for March, $26,589.78; expenses, $18,531.43; net earnings, $8,058.35; deductions, $2,467.75; net income, $5,590.60. Aggregate gross earnings for three months ended Mar. 31, $76,689.59; expenses, $53,367.56; net earnings, $23,304.03; deductions, $7,139.85; net income, $16,182.18.

Montreal Tramways Co.—At a recent special meeting of shareholders the directors were authorized to issue $18,000,000 of capital stock, as and when required for the expansion of business and for new lines. In the course of a conversation, subsequently, E. A. Robert, President, is reported to have said that the first issue would probably be between $3,000,000 and $4,000,000, but no decision had been arrived at as to when such an issue would be made, much depending on the reports and estimates in course of preparation, and on any agreement which might be arrived at with the city.

An interim dividend of 5% on the paid up capital stock has been declared. It is also announced that an issue of $1,000,000 of new capital stock will shortly be made at par.

Nelson St. Ry.—The operating account for the year ended Dec. 31, 1912, shows receipts of $13,232.50, and expenditures of $17,394.42. Deducting from the latter amount the value of supplies on hand $2,900, the loss for the year was $1,261.92. The general balance sheet shows liabilities of $45,245,06, and assets of $67,158,31. Following are the directors for the current year:—J. E. Taylor, Jas. Johnstone, A. S. Herswell, G. F. Mohon, W. Dauche, W. R. Maclean, M.P.P.; C. R. Hamilton, K.C.; E. A. Crease, W. J. Meagher, Dr. W. O. Rose.

Ottawa, Rideau Lakes and Kingston Ry.—The following have been elected directors for the current ear:—N. M. Clougher, President; Hon. W. Dennis, R. McElroy, G. L. Dickenson and H. D. Ball.

The Public Service Corporation, which is a subsidiary of the Montreal Tramways Co., is arranging for the issue of $1,250,000 5% gold mortgage bonds, with a bonus of 100% of common stock. It is stated that the proceeds will be used in payment for the franchises of the Dominion Light, Heat and Power Co., and the St. Paul Electric Light and Power Co. The authorized capital stock of the Public Service Corporation is $5,000,000.

St. Thomas Street Ry.—Cash fares for March, $462.68; tickets, $1,138.75; total, $1,601.43, against $1,114.10 for Mar., 1912. Passengers carried 45,718, against 32,460 in Mar., 1912.

Toronto Ry., Toronto and York Radial Ry., and allied companies.—Gross earnings for Feb., $718,313; operating expenses, maintenance, etc., $377,483; net earnings, $340,830. against $640,246 gross earnings; $320,408 operating expenses, maintenance, etc.; $319,838 net earnings, for Feb., 1912. Aggregate gross earnings for two months ended Feb. 28, $1,495,241; net earnings, $716,603, against $1.296,356 aggregate gross earnings; $649,276 net earnings, for same period 1912.

Winnipeg Electric Ry.—Gross earnings for Feb.. $320,431; operating expenses, $177,897; net earnings $142,534, against $299,246 gross earnings; $164,942 operating expenses; $134,304 net earnings, for Feb., 1912. Aggregate gross earnings for two months ended Feb. 28, $671,928; net earnings, $294.500, against $618,680 aggregate gross earnings; $278,325 net earnings, for same period 1912.

Electric Railway Notes.

The Edmonton Radial Ry. has received a dump car from Canadian Car and Foundry Co.

The Montreal Tramways Co. has received 2 steel street car bodies, from Canadian Car and Foundry Co.

The Halifax Electric Tramway Co. has ordered six closed street cars from the Nova Scotia Car Works.

The duties of Superintendent of the Saskatoon Municipal Ry., Saskatoon, Sask., are being performed by E. Hanson, City Electrical Engineer.

The Moose Jaw Electric Ry. has recently received two semi convertible, single truck cars, equipped with Westinghouse 89 motors, etc.. from Ottawa Car Co.

The Ontario Legislature has approved of a section in the Toronto and York Radial Ry. Co.'s bill, authorizing it to operate Sunday cars on its Metropolitan Division.

The Windsor, Essex and Lake Shore Rapid Ry. has received 2 forty ton steel frame box cars, and 4 forty ton steel underframe flat cars. from Canadian Car and Foundry Co.

The Port Arthur and Fort William Electric Ry. has recently received four semi convertible, pay-as-you-enter trailer cars, 46½ ft. long over all, mounted on 27-G-1 trucks, from Ottawa Car Co.

The Dominion Power and Transmission Co., Hamilton, Ont., has received 12 double truck city cars, mounted on 27-G-1 trucks, with Westinghouse 101-B-2 motor equipment, from Preston Car and Coach Co.

The Montreal and Southern Counties Ry. has recently received four interurban cars, 50 ft. long over all, equipped with Westinghouse H.L. multiple unit control motor equipment, and Westinghouse air brakes, from Ottawa Car Co.

It was recently suggested at a meeting of the Toronto City Council that the Toronto Ry. be asked to sell annual tickets for the use of the public, and in response the General Manager stated that the rates of fares were settled by the Council at the time the franchise was granted and the company has no power to depart from them, but if the Council decided on a change the company would probably comply with the request, being influenced, of course, by the rate proposed to be charged for such annual tickets.

In what is known as the Vipond-Lovett case, now before the Quebec courts, the question of the production of a certain document connected with the formation of the Montreal Tramways Co., has been under discussion for some time. An order was made by Justice Charbonneau, early in March, that this document should be produced by E. A. Robert, President M.T.C., and Secretary Mallison of the Imperial Trust Co. Several motions have been made on the matter since, and Justice Charbonneau, April 17, made an order directing the parties to appear and "show cause why such condemnation should not be meted out to them" for disobeying the order to produce.

Personal Paragraphs.

F. D. BURPEE, Superintendent, Ottawa Electric Ry., was married in Oswego, N.Y., recently.

P. G. GOSSLER, of New York, formerly of Montreal, has been elected First Vice President of the Macon Ry. and Light Co., Macon, Ga.

T. AHEARN, President, and JAS. D. FRASER, director and Secretary-Treasurer, Ottawa Electric Ry., returned to Ottawa early in April, after a trip to Panama, etc.

JAMES ANDERSON, General Manager, Sandwich, Windsor and Amherstburg Ry., returned to Windsor, Ont.. early in April. from a trip to the Mediterranean.

J. C. GRACE, Secretary, Toronto Ry. Co., and Mrs. Grace, left Toronto for England early in April to place their daughter at school, intending to return about the middle of May.

H. LONG, heretofore Electrical Engineer, Lac du Bonnet water power generating station, Winnipeg Electric Ry., has been appointed Electrical Engineer for the company, vice —. Ross, resigned.

A. T. GOWARD, Manager British Columbia Electric Co., Victoria, B.C., was presented with a cabinet of silver by the local officials and employes of the company and its other concerns, April 11, on the occasion of his approaching marriage.

REDMOND QUAIN has been elected a director of the Ottawa Electric Ry., to fill the vacancy caused by the death of G. P. Brophy. He is a native of the city, and was one of the pioneers and one of the first directors of the old street railway there.

S. B. THOMPSON has resigned as Mechanical Superintendent, British Columbia Electric Ry., Vancouver, and has become associated with J. A. Roosevelt, formerly of the Third avenue Ry., New York, N.Y., under the firm name of Roosevelt & Thompson, to investigate and report on electric railway and light properties.

H. C. DONECKER, Secretary-Treasurer, American Electric Railway Association, has been appointed Assistant General Manager, Public Service Ry., Newark, N.J., from July 1. He will continue in charge of association matters until after the next convention.

M. F. WERTH, heretofore chief clerk to Mechanical Superintendent, British Columbia Electric Ry., Vancouver, has been appointed acting Mechanical Superintendent, vice S. B. THOMPSON, Mechanical Superintendent, resigned to enter private business.

International Transit Co's Earnings, Etc.

Following is a comparison of this company's earnings of 1911 and 1912, the figures including the operation of an electric railway in Sault Ste. Marie, Ont., and a ferry service between that town and Sault Ste. Marie, Mich:—

	1911.	1912
Gross earnings	$123,668	$143,372
Operating expenses, taxes, etc.	73,836	73,071
Net earnings	$49,832	$70,301
Bond interest	14,000	13,000
Surplus	$35,832	$57,301

The amount required for bond interest is reduced each year by $1,000 owing to an annual repayment of principal of $20.-000, the next payment of that amount being due July 1. 1913. This will then leave only $240,000 of the bonds outstanding.

Pennsylvania Rd. Electrification.—The directors have authorized the expenditure of nearly $4,000,000 for the electrification of the main line between Philadelphia and Paoli for suburban passenger traffic. The plan includes increasing the track capacity at the Broad St. station, the acquisition of all the property on Filbert St. and the release of such property to the city as may be needed for the Parkway.

Railway Electrification in England.—The electrification of the London, Brighton and South Coast Ry. Co.'s suburban railways, near London, has given excellent results in the economy and the number of passengers carried. Comparing steam and electric traction, the number of trains in and out of Victoria station in one day has risen from 496 to 739. At London Bridge the number has risen from 663 to 901. The number of passengers carried on the South London line since electrification has increased over 4,500,000 each year over that carried during the last year of steam operation. The cost of maintenance of the overhead equipment has worked out at about $107 a mile per year, and the other conditions of maintenance are stated to be equally satisfactory.

Conductor and Ticket Agent Imprisoned.—A. Collins, conductor, and J. A. Bailey, ticket clerk, at Three Rivers, Que., were sentenced at Montreal recently to nine months imprisonment for conspiracy to defraud the C.P.R. Co. After selling tickets to passengers the ticket clerk would board the train, and after Conductor Collins had taken up the tickets he returned them unpunched to the ticket clerk, who caught the first homeward bound train and resold the tickets the same day. The judge told the prisoners that they were liable for seven years imprisonment, but it being their first offence he was inclined to deal leniently with them.

Marine Department.

Coast, Lake and River Officers for 1913.

[illegible] principal navigation companies engaged in Canadian navigation for their various steam vessels and tugs for the current year, have been officially reported to Canadian Railway and Marine World by the managements. In the first column are given the names of the vessels, in the second those of the captains, and in the third those of the chief engineers:—

[illegible] Marie, Ont

[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]

American Interlake Line Limited, Toronto

[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]

[illegible] Limited, Margaretville, N. S.

[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]

[illegible]

Lady of Gaspe	C. Verina	R. Casey

Bras d'Or Steamboat Co Limited North Sydney, N. S.

[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]

Burnham, Morrill and Co., Halifax, N. S.

[illegible]	[illegible]	
Robie M.	R. A. Hines	J. McCarvell

Butler Freighting and Towing Co., Limited, Victoria, B C.

Grainer	J. E Noel	A. Pike

Calvin Co. Limited, Garden Island, Ont.

[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
Parthia	D. Lefave	G Sauve
Prince Rupert	P Sullivan	R H. Veech
Simla	C. E. Coons	D Simons

Campbellton and Gaspe Steamship Co. Limited, Fraserville, Que.

Canada	A. Landry	Jos Cantin

[illegible] Limited, Halifax, N. S

A. W. Perry	H. Doyle	James Smith
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]

Canada Atlantic Transit Co. Limited, Montreal.

[illegible]	[illegible]	[illegible]
Geo. N. Orr	H. Jaenke	J. B Wellman
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]

The Canadian Fishing Co Limited, Vancouver, B.C

Celestial Empire	D Barry	P Vint
Flamingo	A. Freeman	H Britton

Canadian Interlake Line Limited, Toronto.

[illegible]	[illegible]	[illegible]
Acadian	R McIntyre	J. S. Duguid
Calgarian	P McKay	A. L Black
Canadian	W H Anderson	R. McLaren
D. A. Gordon	R F Pyette	G. D Adams
[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]
Kenora	W A Brian	W. Byers
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
Renvoyle	H Redfern	A McLaren
[illegible]	[illegible]	[illegible]

Canadian Lake and Ocean Navigation Co Limited, [illegible]

[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
Turret Court	N. Barrett	H C Harrison

Canadian Lake Transportation Co, Limited, Toronto

[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]

Dominion Coal Co. Limited, Sydney, N S

[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
Kamouraska	D. Morgan	H E Salmon
Knutsford	H Williams	J. H Scamell
Kronprins Olav	P. A. Nilsen	B. Olsen
Lingan	A. L. Patterson	C. B Smith
Louisburg	K. Marsters	C. G. Miller
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
Wabana	D. Reside	J. E. Spedding

Canadian North West Steamship Co. Limited, Port Arthur, Ont.

Atikokan	Jas. Grant	C. Arnberg
George A. Graham	A. A. Hudson	J. H. Louden
Neebing	P. McIntyre	R. R. Foote
Paipoonge	J. N Foote	H. H. Moore

Canadian Pacific Car and Passenger Transfer Co. Limited, Prescott, Ont.

Chas. Lyon	W. Henry	G. M. Hazlett

Canadian Pacific Ry. British Columbia Coast Service, Victoria, B. C.

Beaver	C. E. Seymour	J. Carmicheal
Charmer	D. Brown	J. M. Greenshields
Czar	F. R. Springall	J. Hudson
Joan	S. H Ormiston	C. H. Walter
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
Princess Adelaide	R. A Hunter	T. Moffat
Princess Alice	L. P. Locke	J. Petticrew
Princess Beatrice	G. J. Hawes	J. E. Hill
Princess Charlotte	T. O. Griffin	J. A. Heritage
Princess Ena	G. D Robertson	G. Kearsley
[illegible]	[illegible]	[illegible]
Princess May	J. McLeod	W. Oliver
Princess Patricia	J. Ritchie	W. Anderson
Princess Victoria	P. J. Hickey	J. Wallace
Qualicum	T. Manson	J. H. Purdey
[illegible]	[illegible]	R. C. Coulthard
[illegible]	[illegible]	B. Osbin

Canadian Pacific Ry British Columbia Lake and River Service, Nelson, B. C.

Aberdeen	J. Weeks	S. Collacott
Castlegar	J. Fitzsimmons	G. Smith
Hosmer	F. Orr	M. McKinnon
Kokanee	L. McKinnon	A. McLeod
Kootenay	G. Robertson	A. Thompson
Kuskanook	W. Seaman	J. Cameron
Minto	A. Forslund	F. Swanson
Moyie	W. Wright	D. Betts
Okanagan	G. Estabrooks	O. Estabrooks
Rossland	O. Alfsmo	J. Thompson
Sandon	G. Graham	D Morrison
Slocan	W. Kirby	A. McDonald
[illegible]	[illegible]	[illegible]
Whatshan	J. Dougal	D. Campbell
York	M. Reid	A McLena

Canadian Pacific Ry. Detroit Car Ferry Service, Windsor, Ont.

Michigan	R. Brown	F. Merrill
	H. Farrow	G. Caister
Ontario	J. Carney	A. McDonald
	J. Watt	C. A. Sullivan

Canadian Pacific Ry. Upper Lakes Service, Port McNicoll, Ont.

Alberta	F. J. Davis	C. Butterworth
Assiniboia	L Fyette	A Cameron
Athabasca	J. McCannal	W. Lockerbie
Keewatin	M McPhee	W. Lewis
Manitoba	J McIntrye	J. Aston

Hugh Cann and Sons, Mulgrave, N. S.

Malcolm Cann	J. R. Durkee	D. E Read
Robert G. Cann	W. E. Morris	T. Fader

Cape Breton Electric Co. Limited, Sydney, N. S

Hygeia	A. McLeod	B. Dickson
Pawnee	J. Brown	A. Campbell
Peerless	J. H. Lewis	—. Weeks

Central Canada Coal Co. Limited, Brockville, Ont.

Samuel Marshall	W A. Tullock	F. A. Pringle

Charlottetown Steam Navigation Co. Limited, Charlottetown, P. E. I.

Empress	A. Cameron	J. A. Rowe
Northumberland	A. McLeod	C. Cuming

Coast Steamship Co. Limited, Vancouver, B. C.

British Columbia	G. Foellmer	J. Ellison
Celtic	John Finlay	R. B Reeve
Clansman	M. F Macdonald	H Nissen
[illegible]	[illegible]	[illegible]

Dartmouth Ferry Commission, Dartmouth, N. S.

Chebucto	C. Ozon	A. McLeod
Dartmouth	John Hare	Jas Ross
	[illegible]	[illegible]
Halifax	N A Allen	C. Pearce

Dominion Atlantic Ry., Yarmouth, N. S.

[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
Yarmouth	A MacDonald	D Kingston

Dominion Transportation Co. Limited, Owen Sound Ont.

Caribou	A. A Batten	J. Nicol
[illegible]	[illegible]	[illegible]

Eastern Transportation Co., Limited, Bathurst, N B

Nyanza	A Hains	A. Lavigne

Eastern Manitoulin Royal Mail Steamship Line, Little Current, Ont.

[illegible]	[illegible]	[illegible]
Bon Ami	E. Mackie	R. A Johnston

Farrar Transportation Co. Limited, Collingwood Ont.

Collingwood	F. Scott	D. McLeod
Meaford	J. N. Sheats	John Smith

Forwarders Limited, Kingston, Ont

Port Colborne	W. Steeves	J. Silverthorn

Gaspe and Bay Chaleur Steamship Line, Quebec, Que.

Gaspesien	P. Blouin	N. Protomastro

Grand Manan Steamship Co., Grand Manan, N. B.

Grand Manan	J. A. Ingersoll	W. Gray

Grand Trunk Pacific Coast Steamship Co. Limited, Vancouver, B. C.

Escort No. 2	T. Foster	J. C. Scott
Henriette	H. L. Roberson	J. H. Richards
Prince Albert	D. O'Brien	J. Quine
Prince George	D. Donald	T. O. Handy
Prince John	C. W. Wearmouth	A. S. Munro
Prince Rupert	D. MacKenzie	D. G. Ferrier

[illegible] Hall and Co., Montreal.

Carleton	E. Groulx	E. Scott
Eastwood	B. Bowen	F. Theriault
[illegible]	[illegible]	[illegible]
Sindbad	J. C. McCarty	

[illegible] Limited, Ottawa, Ont.

Roberval	[illegible]	[illegible]

W. Hanna and Co., Port Carling, Ont.

[illegible]		[illegible]
[illegible]	[illegible]	[illegible]

Keenan Towing Co. Limited, Owen Sound, Ont.

Keenan	G. Hindman	W Owens

Keystone Transportation Co. Limited, Montreal.

Keybell	Jos. Murry	E. W. Sparling
Keyport	John Mullen	R. Muchmore
Keywest	James Martin	J. Boak

The Kilkeel Co., Limited, Toronto

Kilkeel	J. T. Elworthy	....

La Have Steamship Co. Limited, West La Have, N. S.

Samson	W. E. Parnell	C. J. Jones
Trusty	J. Crouse	A. Zwicker

Lake Erie Navigation Co., Limited, Walkerville, Ont.

Marquette and Bessemer No. 1	M. M. Rowan	Robt Leitch

Lake Ontario and Bay of Quinte Steamboat Co Limited, Kingston, Ont.

Caspian	J. J. Jarrell	W. S. Parker
North King	....	M. R. Tetro

Lemcke Tug Co. Limited, Lions Head, Ont

Henry Pedwell	W. Spence	N. McDonald

The Levis Ferry Limited, Levis, Que.

Colomb	G. Chamberland	E. Beaudoin
Lauzon	A. Forgues	A. Laflamme
Levis	A. Chabot	X. Bouffard
Plessis	N. Thivierge	W. McMillan

Magdalen Island Steamship Co., Pictou, N. S.

Lady Sybil	F. Ferguson	H. Webster

Maritime Steamship Co. Limited, Blacks Harbor N. B.

Connors Bros.	E. Warnick	J. Hayter

Mathews Steamship Co. Limited, Toronto.

Easton	D. N. Laroche	J. E. Readman
Edmonton	H. Maitland	J. G. Fisher
Haddington	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	J. Cavanagh	[illegible]

Merchants Mutual Line Limited, Toronto.

[illegible]	[illegible]	[illegible]
Beaverton	....	H. Myler
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	J. E. Mann	F. A. McCaulay
Saskatoon	H. J. Aitken	J. G. McHattie

Miramichi Steam Navigation Co. Limited, Chatham, N. B.

Alexandra	J. Nowlan	W. Stewart
Miramichi	J. P. Bullick	C. Johnston
Sybella H.	E. Steel	A. C. McIntyre

Montreal Transportation Co. Limited, Montreal.

Advance	W. Liddell	R. H. Isbester
[illegible]	[illegible]	[illegible]
D. G Thomson	T. O'Connor	G. Henderson
Emerson	W. J Murphy	....
Fairmount	Jas Reoch	G. Flemming
Glenmount	H. Peters	R. Knight
Glide	W. J Murphy	H. Huff
[illegible]	[illegible]	[illegible]
Kinmount	John Wood	R. Taylor
[illegible]	[illegible]	[illegible]
Mary	T. Lepine	T. Brabant
[illegible]	[illegible]	[illegible]
Stormount	P. C. Telfer	F. Moyle
Westmount	F Howell	W. C Spencer
Windsor	J Doyle	R. Hepburn

Newcastle Steamboat Co Limited, Newcastle, N B.

Dorothy N.	C. S. Amos	A. McLean
Rustler	L. McDonald	Jas. Dickens

NIAGARA, ST. CATHARINES AND TORONTO NAVIGATION CO., ST. CATHARINES, ONT.

Dalhousie City	J. W. Maddick	J. H. Brown
Garden City	G. Blanchard	H. R. Welch

ONTARIO CAR FERRY CO. LIMITED, MONTREAL.

Ontario No. 1	F. D. Forrest	J. A. Nicoll

NORTHERN NAVIGATION CO. LIMITED, SARNIA, ONT.

City of Midland	C. Hill	J. Osburn
Doric	S. Hill	Jas. Cameron
Germanic	F. G. Moles	S. Burgess
Hamonic	R. D. Foote	Jas. Wilson
Huronic	A. L. Campbell	F. T. Norris
Ionic	R. Laing	Jas. Adams
Saronic	A. M. Wright	J. H. Spencer
Waubic	G. W. Kinnee	

NORTH VANCOUVER FERRY CO., LIMITED, NORTH VANCOUVER, B.C.

North Vancouver No. 1	W. Fatke	A. Mackintosh
North Vancouver No. 2	R. Spencer	D. Becker
North Vancouver No. 3	W. J. Spracklin I. Butler	W. Whitworth

OTTAWA RIVER NAVIGATION CO., LIMITED, MONTREAL.

Empress	A. Blondin	N. Chartier
Princess	E. Gauthier	F. Piche

OTTAWA TRANSPORTATION CO. LIMITED, OTTAWA, ONT.

Dolphin	Z. Lavigne	D. Maranville
Florence	E. Lefebvre	P. Trottier
George A. Harris	F. Pilon	A. Madore
Glen Allan	A. G. Clark	G. Beaudet
Hall	J. C. Barclay	L. Vezinas
Ottawan	G. Depencier	N. Lavigne
Scotsman	E. Francoeur	V. Lavigne
Sir Hector	W. Mainville	Z. Belanger

THE PACKERS STEAMSHIP CO. LIMITED, VANCOUVER, B.C.

B. C. P.	A. J. Harris	A. Gill
Olallie	....	A. Gill, Jr.
Roman	T. Frederickson	—. Kelly
Terra Nova	W. Beale	....

PARRY SOUND TRANSPORTATION CO. LIMITED, TORONTO

Seguin	W. J. Stitt	W. H. Kerr

PELEE AND LAKE ERIE NAVIGATION CO. LIMITED PELEE ISLAND, ONT.

Alfred Clarke	H. Kirby	D. S. Crawford

PENINSULA TUG AND TOWING CO. LIMITED, WIARTON, ONT.

Crawford	W. M. Tyson	W. C. Fox
Thos. R. Scott	F. Wood	J. G. Simpson

PORT COLBORNE AND ST. LAWRENCE NAVIGATION CO. LIMITED, TORONTO.

Algonquin	F. R. Johnson	H. W. Fletcher

PORT HURON AND SARNIA FERRY CO., PORT HURON, MICH.

Grace Dormer	C. Hill	J. Kinnie
Hiawatha	E. M. Thomas	H. Meyers
James Beard	G. Waugh	O. Durant
Omar D. Conger	W. S. Major	W. Oakes

PRESCOTT AND OGDENSBURG FERRY CO. LIMITED, PRESCOTT, ONT.

City of Belleville	J. Ewart	O. D. Thurston
Miss Vandenburg	A. Black	W. Jemto

PROGRESSIVE STEAMBOAT CO. LIMITED, VANCOUVER B.C.

Harry S.	J. Walters	A. Clampitt
Progressive	A. E. Lewis	G. Dixon
Pronative	J. B. Johnson	O. Mathieson
Protective	W. Chapman	W. Triblecock
Senator	H. Grauer	A. Toren

QUEBEC TRANSPORTATION AND FORWARDING CO. LIMITED, QUEBEC, QUE.

Florence	W. J. Stitt	O. Croteau
J. H. Hackett	J. Thibault	I. Asselin
M. A. Hackett	M. Allison	J. Blanchet

REID NEWFOUNDLAND CO., ST. JOHN'S, NFLD.

Argyle	G. O'Reilley	T. Moyst
Bruce	C. F. Taylor	D. Howe
Clyde	J. Knee	J. Buckingham
Duchess of Marlborough	S. Parsons	J. Stevenson
Dundee	D. Blandford	H. Crawford, Jr.
Ethie	N. Day	J. Macfarlane, Jr.
Glencoe	A. Blandford	E. J. Birch
Home	S. Harbin	J. Cunningham
Invermore	J. Kean	F. C. Barnes
Kyle	W. C. Parsons	....
Lintrose	G. Spracklin	....
Solway	J. Goobie	J. Macfarlane

REVELSTOKE NAVIGATION CO., LIMITED, REVELSTOKE B.C.

Revelstoke	A. Forslund	H. Colbeck

RICHELIEU AND ONTARIO NAVIGATION CO. LIMITED, MONTREAL.

EASTERN DIVISION

Belleville	W. Bloomfield	J. Boisvert
Berthier	C. Laviolette	T. Matte
Boucherville	A. Laviolette	C. Hamel
Longueuil	H. Manderville	H. Noel
Montreal	F. X. Lafrance	G. Gendron
Murray Bay	W. Gagne	A. Gendron
Quebec	L. R. Demers	A. Ouzilleau
Rapids Prince	G. Batten	D. J. Leslie
Rapids Queen	J. P. Stephenson	A. Charbonneau
St. Irenee	J. Dougal	A. Gagnon
Saguenay	C. Koenig	N. Beaudoin
Tadousac	J. Simard	M. Latulippe
Three Rivers	A. Mondor	C. Gendron

THOUSAND ISLANDS AND ST. LAWRENCE DIVISION.

New Island Wanderer	W. C. Hudson	J. A. Cook
Ramona	E. M. Charlebois	E. Case
St. Lawrence	J. Bertrand	B. F. Farrell
Thousand Islander	C. H. Kendall	W. Willis

WESTERN DIVISION.

Kingston	J. A. Booth	C. W. [illegible]
Rochester	J. Owens	J. M. Cummings
Toronto	C. E. Redfearn	W. Chipman

NIAGARA-TORONTO DIVISION.

Cayuga	C. E. Smith	A. J. Woodward
Chicora	T. Allan	N. Griffin
Chippewa	W. Malcolm	H. Parker
Corona	B. A. Bongard	J. Findlay

HAMILTON-TORONTO DIVISION

Macassa	J. Henderson	E. E. Prince
Modjeska	P. Walsh	A. Flumerfeldt
Turbinia	B. W. Bongard	W. Noonan

ST. LAWRENCE AND CHICAGO STEAM NAVIGATION CO. LIMITED, TORONTO

E. B. Osler	John Williams	C. Robertson
G. R. Crowe	C. E. Robinson	W. Robertson
Iroquois	H. Hudson	W. Reid
James Carruthers	W. H. Wright	E. J. O'Dell
W. D. Matthews	P. J. Shaw	W. Harwood

ST. LAWRENCE RIVER STEAMBOAT CO. LIMITED, KINGSTON, ONT.

America	C. J. Hinckley	Jas. Gillie

SEVERN RIVER AND LAKE COUCHICHING NAVIGATION CO., ORILLA, ONT.

Soncie	T. W. Wood	W. C. Wood

SINCENNES-McNAUGHTON LINE, LIMITED, MONTREAL

Adolphe V. Roy	J. Goulet	J. Matte
Alaska	D. Mongeau	W. Provencher
Alberta	A. Boisvert	A. Cailloux
Aurelie G.	A. Duhord	J. Laviolette
Denise S.	J. Millette	O. Coulcombe
Emma L.	U. Latraverse	H. Lagace
Ethel	P. Aussant	R. Daigle
F. Dupre	J. Bibeau	P. Cournoyer
Hudson	C. Legault	N. Rousseau
J. O. Gravel	G. Mongeau	R. E. Roy
John Pratt	I. Beaudry	D. Vezina
Mathilda	J. Cournoyer	N. Moreau
Nathalie R.	A. Goulet	P. N. Rousseau
Rival	S. Parisien	N. Lavallee
Rosalie L.	J. Mongeau	F. Denis
Sin-Mac	Z. Legault	A. Baribeau
Spray	L. Lemay	A. Rousseau
Virginia	P. Bibeau	F. Rousseau
Yvon	A. Rajotte	A. Lemay

SPARROW LAKE STEAMER LINE, SPARROW LAKE, ONT.

Glympse	A. J. Stanton	J. Bourneman
Lakefield	J. Stanton	A. Heye

TIMISKAMING NAVIGATION CO., HAILEYBURY, ONT.

Jubilee	W. Merchant	W. Leclaire
Meteor	McC. Burns	J. Seguin
Silverland	J. Burns	J. D. Andrews

TURRET CROWN LIMITED, TORONTO.

Turret Crown	N. McGlennon	E. Hamelin

UNION STEAMSHIP CO. LIMITED, VANCOUVER, B. C.

Camosun	A. E. Dickson	A. Beattie
Capilano	W. P. Collis	T. Donaldson
Cassiar	G. Gaisford	G. W. Mathews
Chelohsin	J. F. Edwards	G. H. Foster
Comox	J. Brown	A. T. Roy
Coquitlam	N. Grey	R. Holbourn
Cowichan	C. Moody	R. Whyte
Venture	J. Park	C. Arthur

UPPER OTTAWA IMPROVEMENT CO. LIMITED, OTTAWA

Albert	J. Snowden	J. Desrochers
Alert	A. Stewart	P. Rouleau
Alexandra	J. Tierney	G. Houde
Alex. Fraser	T. Draper	D. McKay
Beaver	P. Vejineau	J. Latour
C. B. Powell	J. Ellis	J. Reagean
Castor	D. Farquharson	A. Laganiere
E. H. Bronson	J. C. Merchant	L. Boisvert
G. B. Greene	J. Chartier	G. Noel
G. B. Pattee	A. Smith	W. Desrochers
Hamilton	W. J. Toner	R. Spooner
Hercules	B. Lablanc	R. Mackie
Hiram Robinson	J. Richard	C. C. Berlinguette
Lady Minto	E. Gray	C. Marcellus
Mink	C. Hutchinson	W. Desrochers
Muskrat	L. Gray	F. Buck
Pembroke	O. Blondin	H. Latour
Pollux	C. Thrasher	P. Ferrigan
Samson	W. C. Russell	M. Fournier
Wabis	....	D. Tierney

VALLEY STEAMSHIP CO. LIMITED, ANNAPOLIS ROYAL, N.S.

Granville	C. W. Collins	J. McCollough

VICTORIA NAVIGATION CO. LIMITED, OTTAWA, ONT.

Victoria	F. Elliott	P. Belanger

VICTORIA STEAMSHIP CO. LIMITED, BADDECK, N. S.

Blue Hill	D. MacRae	H. Jones

VANCOUVER TUG AND BARGE CO. LIMITED, VANCOUVER, B.C.

Clayburn	H. Jones	A. McGuire
Dola	W. Verge	W. McGuire

WALKERVILLE AND DETROIT FERRY CO., LIMITED, WALKERVILLE, ONT.

Ariel	F. A. Wilkinson	P. McLaren

WESTERN NAVIGATION CO. LIMITED, FORT WILLIAM ONT.

Kaministiquia	E. L. Stephen	H. Young

WESTERN STEAMSHIP CO., LIMITED, TORONTO

J. A. McKee	R. G. Bassett	A. M. McInnes
Wexford	B. Cameron	Jas. Scott

WHITE PASS AND YUKON ROUTE, VANCOUVER, B.C.

Alaska	W. A. Blair	G. Leach
Casca	C. H. Bloomquest	J. R. Gaudin
Dawson	J. O. Williams	J. R. Young
Gleaner	J. G. Roberts	J. Lauderdale
Scotia	J. McDonald	D. Sullivan
Selkirk	G. H. McMaster	W. C. Vey
Selwyn	C. H. Gardner	P. Bourne
Whitehorse	W. H. Turnbull	P. Larssen
Yukon	J. C. Green	J. W. Pearson

The New Atlantic Mail Service Contract.

The Postmaster General announced in the House of Commons, Apr. 7, that a contract had been entered into for the carriage of mails between Great Britain and Canada. He stated that up to the present, the Atlantic mail service had been performed by practically four steamships, on a weekly basis. Some other lines had received small amounts in connection with the service, but in the past, a great part of the mail had been carried via New York. During the past six years, the Dominion had been paying about $185,000 a year for its mails going to Great Britain by way of New York. The Canadian service had been performed by the steamships Victorian and Virginian of the Allan Line, and the Empress of Britain and Empress of Ireland of the C.P.R. Under the new contract there will be a mail service three times a week in the summer and twice a week in the winter, instead of once a week as under the former contract, and instead of four vessels engaged, there will be 12. The contract includes four companies, viz.: Allan Line Steamship Co., C.P.R., Canadian Northern Steamships, and White Star-Dominion Line. During the summer the Allan Line will employ the steamships Victorian, Virginian, Corsican and Tunisian, and, until the Alsatian and Calgarian are ready for service, the Grampian and Hesperian will also be used; the C.P.R. will use the Empress of Britain and Empress of Ireland; the Canadian Northern Steamships, Ltd., the Royal Edward and Royal George, and the White Star-Dominion Line, the Laurentic and Megantic. In the winter service, the Alsatian, Calgarian, Victorian, Virginian, Empress of Britain, Empress of Ireland, Royal Edward, and Royal George will be employed, while the White Star s.s. Teutonic will act as an extra vessel both summer and winter, to take the place of any of the others that may be laid up.

The summer sailings will be on Tuesdays, Thursdays and Saturdays, from any port that the companies may please, provided they are Canadian ports, the ones named being, Montreal and Quebec in summer, and Halifax and St. John in winter. The annual subsidy to be paid for the service, both ways, is $1,000,000. The landing ports in Great Britain are also at the option of the companies, either Liverpool, or Bristol, but the Hesperian and Grampian, which will only be in service for a short period, will continue to make Glasgow their port, until the Alsatian and Calgarian are ready. For the purposes of apportionment of the amount of the subsidy, the total is to be divided into weekly portions, and then divided among the vessels engaged, on a basis to be agreed upon, thus while the total amount paid for the winter service is the same each week, as in the summer, the amount for each vessel will be greater, owing to the lesser number engaged, and the increased difficulties of the service. The White Star-Dominion Line vessels will not carry mails during the winter as their winter port is at Portland, Me., but the Teutonic will be at the call of the Dominion Government, in case of accident to any of the other vessels.

The keel of the first vessel to be built by the Coquitlam Shipbuilding Co., was reported to have been laid down at the yards at Pitt River, recently. The vessel will be steam driven, using liquid oil as fuel, and she will measure 236 ft. over all, with 187 ft. keel and 43 ft. beam, and will have capacity for about 1,500,000 ft. of lumber.

Report of the Commission on the St. Lawrence Pilotage.

The report of the commission appointed by the Dominion Government to enquire into the St. Lawrence pilotage system was presented to the Minister of Marine, April 10. The commisisoners, Commander Lindsay, Dominion Wreck Commissioner; T. Robb, Manager Shipping Federation of Canada, and A. Lachance, Chairman of Pilots, Quebec, agreed on the report, with the exception of the recommendation for the abolition of the Quebec Corporation of Pilots, to which Mr. Lachance did not agree, and in a minority report gave his reasons for his dissent. Following are the recommendations made:—

That the Corporation of Pilots for and below the harbor of Quebec be abolished and the charter cancelled.

That the pension fund should be taken over and managed by the Minister of Marine and Fisheries.

That the Government should appoint a superintendent of seagoing experience in full charge of the district to organize and administer its affairs and be directly responsible to the Minister. That he should not have been a pilot of the district at any time, and qualified assistants should be appointed as may be found necessary.

That a change should be made in the present apprenticeship system. That the indentures should be made to the Minister. That public notice should be given when there are vacancies for apprenticeship. That examinations of candidates should be carefully conducted under proper supervision, either in English or in French, each candidate having previously passed the physical and eyesight tests.

That branch pilots should not be allowed to take work outside of their pilotage district, or be employed in any other occupation than pilots within that district.

That the eyesight test should be on a standard basis and should not be left altogether to the theories of the examining oculist, and that one standard should apply to all.

That the number of branch pilots be reduced, the maximum to be 70 and the minimum 60.

That the age of retirement for branch pilots should be 65 years, with a limited yearly extension to men who can pass the semi-annual examinations and that retirement be compulsory at the age of 70.

That an improved pilot tender be provided at Father Point. That a pilot launch be provided at Quebec.

That a chart of the Saguenay River be immediately prepared and made available to navigators, showing lights, buoys and dredged channel near Chicoutimi and that additional aids to navigation as recommended in the evidence be installed in the river.

The report states that the evidence in regard to the Montreal pilotage district is [illegible] of a favorable nature, the shipping companies being [illegible] in favor of being allowed to select their men. The advantages of [illegible] were found to be in good condition, the discipline well maintained and the change to the authority of the Minister of Marine had been a complete success.

The official in charge of the Quebec office appears to the commission to be thoroughly incompetent to fill this responsible position, and an immediate remedy is suggested if the working of the system is not [illegible]. It is suggested that the number of selected apprentices be restricted to four and that the number of entrants for apprentices be limited to meet [illegible] requirements, [illegible] the vacancies for apprentices should be notified by public advertisement; that the length of service of an apprentice should be reduced to six years in place of seven, two years of which should be at sea on a vessel employed in the Canadian trade to the St. Lawrence; that either English or French be used for examination purposes; that permission should be given to liner pilots to work for more than one firm; that the tariff be increased; and that certain exemptions for the Montreal district be allowed.

The commission recommends that the superintendent at Quebec have control of both Montreal and Quebec pilotage. The opinion is expressed that the pilotage tariff at Quebec is too high, having been fixed in the days of the sailing ships, when trips to Quebec sometimes occupied several days. The lowest rate prevailing is in advance of the Montreal rate, although the responsibilities of the latter are much more severe.

In regard to Quebec pilotage the report says that the whole system is loose and unsatisfactory. The superintendent appointed by the Government has generally superintended nothing, but got all the information from the secretaries of the corporations who submitted it to the department as coming from themselves. The commission recommends the appointment of a pilotage commission, with functions partly executive and partly administrative. The executive functions would deal with the making of orders, the constitution, the regulation of pilotage at ports and the passing of bylaws, all subject to the approval of the Minister.

Mr. Lachance, in his minority report, differs from the other commissioners mainly in reference to the suggested abolition of the Corporation of Pilots at Quebec. He suggests that some restrictions be made, to oblige small craft to keep out of the narrow channel when there is sufficient water elsewhere; that their lights should not be all around the horizon, and that vessels from the lakes should be forced to submit to the rule of the road when navigating the St. Lawrence River. He also suggests an increased tariff on ocean steamers, believing that the Montreal tariff is very low. He believes, in conclusion, that the Corporation of Pilots for and below the harbor of Quebec should be maintained with all its rights, especially in relation with the sharing of the earnings.

The pilotage earnings of the Montreal district in 1911 were $87,928.55, and of the Quebec district $143.741.87.

Montreal Harbor Improvements for 1913.

The improvement programme which the Montreal Harbor Commissioners have outlined for the current season involves the expenditure of approximately $2.000.000, and marks the commencement of the second stage of the plan adopted three years ago, and which will be spread over 12 years. The chief work for the season covers the decreasing of the velocity of the St. Marys channel current to within the safety margin for vessels navigating the harbor, and which will probably reduce the necessity for the semaphore signalling system which has been under consideration. In dealing with the current, dredging will be undertaken at the guard pier to the south of St. Helens Island, and the artificial works at Moffat Island. The east quay wall embankment on the south of the guard pier will also be extended, thus [illegible]ing the volume of water below the Victoria pier across the channel towards Moffat Island. The construction of the artificial embankment will also be continued, and tracks laid thereon, and on completion the whole will form a part of the harbor railway terminal system. Extensions to the Alexandra, King Edward and Jacques Cartier piers are also contemplated, but it is said that such work cannot well be undertaken until the completion of the dredging operations at the guard pier, and the alteration of the entrance to the Lachine Canal. A 15 ton electric hoist, capable of taking full teams to the second floor of the Allan and White Star Lines' sheds, is to be erected at once. The addition of 1,500,000 bush. capacity to elevator no. 1 has already been announced; elevator no. 2 is to have its conveyor galleries completed, leading from the elevator to shed 1, on the Victoria pier. The high level tracks between Victoria and Racine piers are to be ballasted, trimmed and made permanent, and a 500 ft. wharf is to be built at Point aux Trembles. Other work will comprise the levelling up of the dry dock site, so that the erection of the machine shops, etc., in connection with the dry dock and shipbuilding plant can be proceeded with.

Dominion Government Fisheries Patrol Steamboat for Lake Winnipeg.

The Dominion Government is considering tenders for the construction, equipment, dismantling, re-erection and delivery of a first class twin screw, steel, wood sheathed fisheries patrol steamboat, for Lake Winnipeg, to be delivered at Selkirk, Man. Following are the principal dimensions:—Length between perpendiculars, 140 ft.; breadth, moulded, 26½ ft.; breath, extreme, 27 ft. 9¾ ins.; depth moulded, 13½ ft.; load draught level keel to bottom sheathing, in fresh water, 7½ ft.; deadweight on above draught, 60 tons; indicated horse power, 900; complement, officers and men, 15.

The vessel is to be of steel throughout, except where otherwise specified, and to be built and engined in accordance with the specifications, under Government survey, and to be classed 100 A1 at Lloyd's for lake service, under their special surveys. She is to be fitted with water ballast, and full equipment to the Board of Trade or Canadian Steamboat Regulations, with five main transverse water tight bulkheads. A water tight flat at bow and stern, with the bulkheads adjoining, will form the trimming tanks. The general construction outline will be with straight stem, cruiser stern and two decks, the main deck being continuous, and the lower deck extending from the stem to the forward boiler room bulkhead. It is specified that the steel and all material, equipment, auxiliaries, stores, etc., shall be of Canadian or British manufacture throughout. The engines are to be of the twin screw, triple expansion, jet condensing type supplied with steam by two Scotch boilers working under forced draught, and for a working pressure of 180 lbs. a square inch. Complete electric light installation, with steam driven turbo generator is to be supplied, and all auxiliary pumps, steam windlass, steam capstan, steam steering gear, etc.

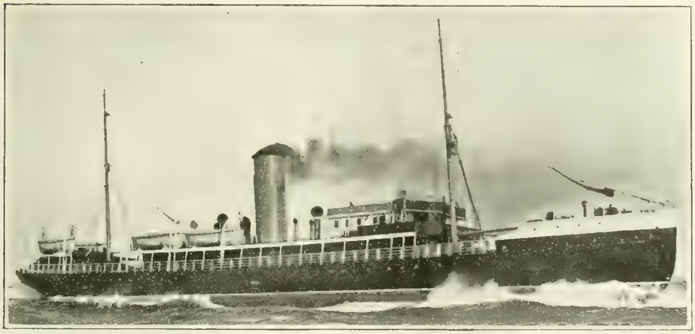
The vessel is to be erected, dismantled and the various parts painted and numbered, and together with the engines, boilers, auxiliaries, equipment, etc., packed ready for shipment to Selkirk, Man., eight months after the awarding of the contract, and then forwarded to Selkirk, where the final assembling, erection, launching, completion and trials will be made.

The Reid Newfoundland Company's s.s. Lintrose.

The mail steamship Lintrose, which has been built at Newcastle on Tyne, Eng., for the Reid Newfoundland Co., to run between Port aux Basques, Nfld., and North Sydney, N.S., made her trial trips early in March, the President, W. D. Reid, representing the owners, and shortly afterwards she left for Newfoundland, arriving towards the end of March, when she was immediately placed on her route with the s.s. Bruce. The accompanying illustration is from a photograph taken during one of the trial runs.

The Lintrose is exceptionally strongly constructed for running through the ice which she will frequently find on her route, and is very finely modelled. She has accommodation for over 30 1st class passengers, including three special rooms for one passenger each, and a ladies' room holding 10. There is a fine smoking room on the promenade deck and a dining saloon, and a ladies' room on the shelter deck; all the 1st class passenger accommodation is amidships. Accommodation for 150 2nd class passengers is provided in the after part. Both the promenade deck and the shelter deck form spacious promenades for passengers.

The Lintrose is 255 ft. long, by 37 ft. beam, and in addition to the usual installations, of electric light, steam heating, etc., wireless telegraph is fitted. The propelling machinery consists of single screw triple expansion engines, supplied with steam by four large boilers working under forced draught. On the trial trips the machinery worked without the slightest hitch, giving satisfaction to all concerned. A maximum speed of nearly 16 knots was attained. (Mar., pg. 145.)



The Reid Newfoundland Co.'s Steamship Lintrose.

The Canadian Pacific Railway's Pacific Steamship Service.

The C.P.R.'s new steamship Empress of Russia sailed from Liverpool, Eng., April 1, via the Mediterranean, Suez Canal, Colombo, Singapore, for Hong Kong, China, to take her place on the Pacific service between British Columbia, Japan and China, and she is expected to reach Vancouver, June 7. She carried a considerable number of passengers.

The second of the company's new vessels, the Empress of Asia, will leave Liverpool, June 14, and will proceed via Maderia, Cape Town, Durban, Colombo, and Singapore.

When the Empress of Russia and the Empress of Asia commence their regular runs on the Pacific, cabin fares on the Empress of India and the Empress of Japan will be reduced, and special rates will be charged with the privilege of travelling by one of the new Empresses, one way, on a round trip.

Steam Car Ferry for National Trancontinental Railway at Quebec.

The N.T.R. Commission has let a contract for building a steam car ferry to Cammell, Laird and Co., Birkenhead, Eng., to be used near the City of Quebec for the transportation of trains across the St. Lawrence River, pending the completion of the Quebec bridge.

The principal dimensions, etc., will be as follows:—Length on 15 ft. water line, 304 ft.; length over fenders, about 326 ft.; breadth, extreme, about 66 ft. 9½ins.; depth moulded, 23 ft.; mean draught with train load of 1,285 tons (gross), 15 ft.; speed, with train load of 550 tons (gross), 15 statute miles per hour.

The vessel will be of the twin screw type, with a third ice breaking propeller fitted at the fore end, for the carrying of passenger and freight trains at all seasons of the year, these trains being of standard type and composed as follows:—Standard passenger train: 1 locomotive, 70 ft.; 3 express and baggage cars, 67 ft. each; 3 passenger cars, 80 ft. each; 3 sleeping cars, 80 ft. each; or, standard freight train: 18 loaded freight cars, 45 ft. each.

The trains will be supported on three lengths of track carried on a tidal deck, the length of each track being about 272 ft. The tidal deck will be supported on columns, and is to be manipulated by means of screw shafting, so that it may be raised or lowered at the rate of 1 ft. a minute when fully loaded, the total range being 18 ft. At each end of the tidal deck, an adjustable hinged gangway, 28 ft. long, is to be fitted, suitable for the conveyance of the trains to and from the land tracks. The tidal deck will be raised or lowered by vertical screws hanging in suspension, and working on ball bearings, engine of the high pressure type, cylinder, 15 ins. dia., and 21 ins. stroke.

Above the highest position of the cars on the tidal deck will be a promenade 4 ft. wide to be arranged all round the vessel. Accommodation will be arranged on the platform deck below the upper deck forward on port side for captain, mate, chief engineer, 2nd engineer, 4 deck hands and 6 firemen, with galley, mess room and cook's room on starboard side.

The vessel is to be built under special survey, in accordance with the requirements of Lloyd's Register, and to be classed 100 A1. She will be specially strengthened for crossing the St. Lawrence in winter and for breaking ice at the landing berth. She is to be well heated and ventilated, fitted with hot and cold water service and lighted throughout by electricity.

The main propelling machinery will consist of two sets of triple expansion surface condensing engines, exhausting into one condenser, and eight single ended cylindrical boilers of the return tube type worked under natural draught. The main engine will have cylinders of the following sizes:—Diameter of high pressure cylinder, 23 ins.; diameter of intermediate cylinder, 35 ins.; diameter of low pressure cylinder, 55 ins.; stroke, 33 ins. The machinery for the forward ice propeller will be one set of direct acting, inverted, compound surface condensing engines. Reversing gear to be combined hand and steam, working pressure 165 lbs. per square inch. Cylinders: diameter of high pressure, 15 ins.; diameter of low pressure, 32 ins.; length of stroke, 21 ins.

Delivery of the vessel is to be made at Quebec Harbor on or before May 15, 1914.

Richelieu and Ontario Navigation Company's Appointments.

The following appointments, which cover the vessels of the Niagara-Toronto Division, and of Inland Lines, Ltd., have been made, in addition to those mentioned in our last issue:—

E. E. HORSEY, heretofore General Manager, Lake Ontario and Bay of Quinte Steamboat Co., Kingston, Ont., has been appointed Assistant to the Manager, Western Lines, R. & O. N. Co. Office, Kingston, Ont.

JOHN BELL, heretofore General Agent, Inland Lines, Ltd., has been appointed Superintendent of Terminals, Toronto, and in charge of operation of all vessels.

W. B. HINES has been appointed Wharfinger, Yonge St. Dock, Toronto, in charge of all traffic going over the terminal.

T. E. COLEMAN has been appointed Wharfinger, Bay St. Dock, Toronto, in charge of all traffic going over the terminal.

DR. J. E. ELLIOTT has been appointed Surgeon for the companies, at Toronto, and all officers and employes, ashore or afloat, will in case of accidents or sickness, communicate with him. In the event of his not being able to be found, and the matter is urgent, the nearest physician should be sent for.

J. J. HENNIGAR has been appointed General Agent in charge of freight and passenger traffic, cartage service, coal company and terminals, at Hamilton and Burlington Beach, Ont. Office, Hamilton, Ont.

J. A. VILLENEUVE, who was Comptroller and Treasurer, R. & O.N. Co., at Montreal, until the reorganization of the staff recently, retires on a pension from May 1.

The Prudential Trust Co. has been appointed transfer agent for the company, and the Royal Trust Company has been appointed registrar.

To mark the opening of the 1913 season of lake navigation, a spectacular sailing of grain laden vessels was arranged to take place from Thunder Bay, when 60 of the largest grain vessels engaged in the Canadian trade, left the harbors of Fort William and Port Arthur, with about 12,250,000 bush. of grain. The sailing has been recorded by cinematograph, and will be reproduced throughout the world. Prior to the vessels leaving the ports, the captains were entertained to dinner by the Fort William Board of Trade.

The Shipping Federation of Canada's Annual Meeting

[illegible]

Alleged Discrimination Against Ontario Vessels in Montreal Harbor

[illegible]

The Cunard Steamship Company's s.s. Andania

[illegible]

Dyke in Livingstone Channel, Detroit River.

[illegible] to deepen the Livingstone Channel. [illegible]

[illegible]

The Reid Newfoundland Co.'s s.s. Kyle.

[illegible] expansion engines, supplied with steam by [illegible]

The trial trips will probably be made [illegible] for Newfoundland early in June.

The Richelieu and Ontario Navigation Co's New Incorporation.

The Richelieu and Ontario Navigation Co., [illegible] minion Companies Act with a capital of [illegible] vide the advantages of steam navigation for the inhabitants of the districts of Mont[illegible] [illegible] powers.

[illegible]

[illegible] Paisley, Scotland, which he sailed out to [illegible] buoy and fisheries service, and has at various times acted as nautical assessor in investigations into marine casualties on the coast.

List of Steam Vessels Registered in Canada during Jan., Feb. and March, 1913

No.	Name	Port of Registry	When	Where Built	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible] N.S	[illegible]	Lunenburg, N.S	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
130764	Aurora 2nd (a)	Kingston, Ont.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible] N.B	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible] B.C	[illegible]	[illegible] B.C	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible] B.C	[illegible]	North Vancouver, B.C	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Giant Explosives, Ltd., [illegible]
[illegible]	[illegible]	[illegible] B.C	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
123731	Harley	Montreal	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	Sarnia, Ont	[illegible]	Willington Quay, Eng	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Imperial Oil Co., [illegible], Ont
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	Huron, O.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible] Fort William, Ont.
[illegible]	[illegible]	[illegible] B.C	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Canadian Canning Co., London, Eng.
[illegible]	[illegible]	[illegible]	[illegible]	Dumbarton, Scotland	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Canada Interlake Line, Ltd., Toronto
[illegible]	[illegible]	[illegible] B.C	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Ocean Freight Line, Ltd., Toronto
[illegible]	[illegible]	[illegible]	1912	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	Halifax, N.S	[illegible]	[illegible] N.S	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	A. B. Crosby, Halifax, N.S
[illegible]	[illegible]	[illegible] B.C	1912	[illegible] B.C	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	1906	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	1907	Dumbarton, Scotland	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	Vancouver, B.C	[illegible]	[illegible] B.C	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	Dumbarton, Scotland	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
133037	[illegible]oketie	Victoria, B.C.	[illegible]	Vancouver, B.C	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	F. J. [illegible]
[illegible]	Skodoo 23	[illegible]	[illegible]	Steveston, B.C	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	Spit	[illegible]	[illegible]	[illegible] B.C	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	Vancouver, B.C	[illegible]	Vancouver, B.C	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	Steveston, B.C	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible] B.C	[illegible]	[illegible] B.C	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible] B.C	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

List of Sailing Vessels and Barges Registered in Canada during Jan., Feb. and March, 1913.

No.	Name	Port of Registry	Rig	When	Where Built	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible] No. [illegible]	[illegible], B.C	[illegible]	1913	Vancouver, B.C	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible] N.S	[illegible]	[illegible]	[illegible] N.S	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible] N.S	[illegible]	1905	Lunenburg, N.S	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	1913	Tancook, N.S	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible] N.S	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible] N.S	[illegible]	[illegible]	[illegible]	[illegible]	J. Pubhover, M.O., [illegible]

Atlantic and Pacific Ocean Marine.

The Quebec Steamship Co. has declared a dividend of 4% for 1912, payable May 1. This makes the 66th dividend paid.

The C.P.R. has opened large waiting rooms, with a creche to accommodate 20 children, at Liverpool, for its third class Atlantic passengers.

The C.P.R. has had its Atlantic Empress steamships fitted with electric radiators in all outside first class staterooms, the library and the first class smoking room.

The Donaldson Line s.s. Cassandra was driven on to the dock wall, at Glasgow, Scotland, Mar. 30, during a high wind, and her bows were considerably damaged.

Donaldson Bros., Ltd., owning and operating the Donaldson Line of steamships between Canada and Scotland, has been registered in Great Britain with a capital of £200,000 in £1 shares. The directors are, W. C., C., W. B., and N. P. Donaldson.

The Union Steamship Co. of New Zealand's s.s. Niagara, recently built at Glasgow, Scotland, for the service between Australia and Canada, sailed from Great Britain about the middle of March for Australia.

The Cunard Co.'s s.s. Aquitania, the largest steamship built in Great Britain, was launched at Glasgow, Scotland, Apr. 21. She is built with a double hull, and has lifeboat accommodation for the full complement of passengers and crew.

The Royal Mail Steam Packet Co. is reported to be making arrangements for a considerable extension of its service, by building a number of vessels to operate between Great Britain, Spain, Cuba, Jamaica, through the Panama Canal, to Vancouver, B.C., and calling at one or more U. S. Pacific coast ports.

H. Milburne, who has been acting as Marine Superintendent, Canadian Northern Steamships, Ltd., at Halifax, during the winter, since the appointment of Capt. F. J. Thompson to the command of the s.s. Royal George, will continue to act in that capacity at Montreal, during the coming season.

Elder Dempster and Co.'s s.s. Sokoto opened the navigation season on the St. Lawrence, Apr. 21. being the first vessel to arrive in Montreal harbor on that date. The captain was awarded the usual gold headed cane presented by the Harbor Commissioners to the captain of the first vessel arriving in each season.

A press report from Montreal, Apr. 21, stated that the appeal of Capt. Harrison, late commander of the Canadian Northern Steamships, s.s. Royal George, from the judgment of the Dominion Wreck Commissioner, in the matter of the wreck of the vessel near Quebec, in Nov., 1912, when his certificate was suspended for a year, has been allowed.

The s.s. Harley has been transferred from the British to the Canadian register, in the name of C. W. Harrison, London, Eng., as managing owner. She was built at Hartlepool, Eng., in 1906, and is screw driven with engine of 336 n.h.p. Her dimensions being: length 359.8 ft., breadth 50.2 ft., depth 26.4 ft.; tonnage, 4,171 gross, 2,707 register.

The C.P.R. commenced its Austro-Canadian steamship service towards the end of March, by the sailing of the s.s. Ruthenia, formerly Lake Champlain, from Trieste, Austria, for Halifax and St. John. This was followed four weeks later by the s.s. Tyrolia, formerly Lake Erie, sailing for Quebec and Montreal, to which latter ports all sailings will be made during the St. Lawrence navigation season.

The Montreal Harbor Commissioners have allotted berths for ocean going vessels using the port, as last year, with the exceptions, that the C.P.R. will, in addition to the berths occupied last year, have no. 15, which was formerly used by the Canada Line; the Canada Line and the Austro-Americana Line have been allocated to berth 16, and La Cie. Generale Transatlantique to berth 10, which it will share with Canadian Northern Steamships, Ltd.

In regard to a number of press reports respecting the proposed Government subsidy for the operation of an improved steamship service between Canada and the West Indies, in which it has been repeatedly stated that arrangements have been made with the C.P.R., and Pickford and Black, respectively, for such service, the acting Minister of Trade and Commerce stated in the House of Commons, recently, that the reports were incorrect, that the matter was still under consideration and had not been decided.

The Ocean Freight Line, Ltd., of Toronto, has acquired the s.s. Moldegaard, which was built at Bergen, Norway, in 1906, and overhauled at Brooklyn, N.Y., in 1912. She is screw driven by engine of 270 n.h.p., and is of the following dimensions: length 321.1 ft., breadth 45.2 ft., depth 20.6 ft.; tonnage, 2,864 gross, 1,660 register. We are informed that this company intends operating the vessel from New York in the sea going trade. The Canadian office is located at 16 King St. West, Toronto. The President, T. K. Seward, has his office in New York.

J. I. Hobson,
Comptroller and Treasurer, Richelieu and Ontario Navigation Co.

The Newfoundland Marine Court has decided that the loss of the Furness Line s.s. Florence, Dec. 20, 1912, while running between Halifax, N.S., and St. John's, Nfld., was due to neglect in not taking soundings when approaching the Newfoundland coast. The master knew that he was approaching Cape Pine, and a lookout was kept, but as no observations could be taken on account of the weather, it is difficult to understand why soundings were not taken. No blame was attached to J. H. Hedley, the second officer, who was one of those saved, as everything that occurred during his watch was reported to the captain, who was also on the bridge less than an hour before the vessel ran ashore.

The appeal of the White Star Line in England, against the decision of the Admiralty Court, in the case of the collision between the s.s. Olympic and H.M.S. Hawke off the Isle of Wight, Sept. 2, 1911, has been dismissed, and the decision of the lower court sustained, that the Olympic was responsible for the collision, which could have been avoided almost up to the last moment. This was the case which aroused so much interest in the matter of the effect of suction, caused by the passage of a large vessel in the near vicinity of a smaller one. At the time of the collision, the Olympic was in charge of Capt. Smith, who was later transferred to the s.s. Titanic, which was lost on her maiden trip, Apr. 12, 1912.

Maritime Provinces and Newfoundland.

The name of the steamboat Neptune, registered at St. John, N.B., has been changed by order in council to Excudit.

Capt. C. T. Dakin, a native of Digby, N.S., who had been connected with coast navigation for a number of years, and formerly commanded the Dominion Government s.s. Lansdowne, died at Rednerville, Ont., Mar. 27, aged 80.

The s.s. Westport III, while running between St. John, N.B., and Digby, N.S., was discovered to be on fire, recently. The crew kept the fire under, and the vessel was eventually beached, the damage being chiefly confined to the cargo.

The Crystal Stream Steamship Co. is reported to be negotiating for the purchase of the old Star Steamship Co.'s wharf at Fredericton, N.B. The price asked by the St. John River Steamboat Co., the present owner, is given as between $8,000 and $9,000.

The Fredericton Steamship Co. is applying for incorporation under the New Brunswick Companies Act, with $5,000 capital, and office at Fredericton, to purchase the steamboat Hampstead, to acquire other vessels, and to carry on a general navigation business on the St. John River and its tributaries. The incorporators are: E. G. Hoben, W. G. Clark, F. W. Porter, H. Rogers, Fredericton; and F. D. Swim, Blissfield, N.B. The Hampstead is owned by the St. John River Steamship Co., South Bay, N.B., and was built at Hampton, N. B., in 1893. She is screw driven by engine of 20 n.h.p., and is of the following dimensions: length 94 ft., breadth 17.7 ft., depth 7 ft.; tonnage, 235 gross, 159 register. It is reported that she is to be renovated and operated between Fredericton and Gagetown this season.

Province of Quebec Marine.

Capt. H. Kjerland has been appointed Superintendent of the Quebec Salvage and Wrecking Co., Quebec, vice G. T. Davie, resigned. He assumed his duties on the opening of navigation on the St. Lawrence River.

The Quebec Harbor Commission is extending shed 25 on the west end of the breakwater, by 300 ft., to cover the whole of the breakwater to the public entrance, and provide an additional berth for steamship accommodation.

The Montreal Harbor Commissioners returned, Apr. 1, from a tour of inspection of various U. S. ports. It is said that they have decided that, owing to physical conditions, the port must be developed along lines closely following those adopted at European ports, rather than such as have been followed in the U. S.

Navigation in Montreal harbor was officially opened Apr. 11, thus establishing a record for the shortness of the closed season, which dated from Jan. 3. The latest date on which navigation has been closed, prior to the one mentioned, was Jan. 1, 1912, and the previous earliest date for the opening was Mar. 30, in 1879.

The Minister of Marine introduced a bill in the House of Commons, Mar. 31, as an amendment to the Quebec Harbor Commissioners Act of 1889, to remove any doubt as to the right of the Commission to perform shunting operations at the harbor. The bill is similar to that enacted for the Montreal Harbor Commission in 1909.

The Postmaster General recently announced that a contract had been awarded for the construction in Glasgow, Scotland, of a powerful ice breaking car ferry steamboat, to connect the sections of the National Transcontinental Ry., on the north and south shores of the St. Lawrence, until the completion of the Quebec Bridge. The contract price is stated to be $558,000. Full particulars of the vessel are given on another page of this issue.

The Sincennes-McNaughton Line's steam tug Adolphe V. Roy was launched at Sorel, Apr. 5. Her dimensions are: length 105 ft., breadth 21 ft., depth 9 ft., with 6½ ft. draught, when loaded. She is equipped with fore and aft compound engines, with cylinders 13 and 26 ins. diar., by 18 ins. stroke, giving her a speed of about 12 knots an hour.

The River Lievre Navigation Co., Ltd., has been incorporated under the Dominion Companies Act, with $50,000 capital, and office at Buckingham, Que., to own and operate steam and other vessels, and to conduct a general navigation and land transport business. The incorporators are G. Bothwell, G. N. Bothwell, A. MacLaren, A. O. Anderson and R. MacL. Kenny, Buckingham, Que.

The bill which the Minister of Marine has introduced into the House of Commons, as an amendment to the Quebec Harbor Commissioners Act, repeals par. c., subsection 2, sec. 22, of the 1899 Act, and more clearly defines the Commission's powers as to the operating of railway tracks in the harbor, by it, and especially regarding the operation of switching locomotives. A similar amendment was made to the Montreal Harbor Commissioners Act in 1909.

In the House of Commons, Apr. 7, the acting Minister of Trade and Commerce stated that the Government has a contract with the Campbellton and Gaspe Steamship Co. of Fraserville, extending to the close of navigation 1915, for a service between Campbellton, N.B., and Gaspe, Que., for which an annual subsidy of $20,000 is paid. The contract provides for the Government control of rates for passengers and freight. The s.s. Canada performs the service.

The Minister of Marine recently introduced into the House of Commons, a bill providing that the Government may from time to time make advances, not exceeding $3,500,000 in the aggregate, to the Quebec Harbor Commission, for the construction of such terminal facilities as are necessary for the proper equipment of the port. Provision is also made for the deposit of the city debentures to the value of the advances made, repayable in 25 years with interest at 3½%.

The Montreal Transportation Co.'s electrically propelled vessel Tynemount, the first seagoing vessel of this type, was launched at Middlesbrough, Eng., recently. She is 250 ft. long, 42½ ft. wide, and 19 ft. deep, and about 2,400 tons. The propeller is driven by electric motor, power for which is obtained from two Diesel type engines. A full description of this vessel and its arrangement of machinery was given in Canadian Railway and Marine World for Nov., 1912.

The Cabotia Steamship Co., Ltd., has been incorporated under the Dominion Companies Act, with $50,000 capital, and office at Montreal, to own and operate steam and other vessels, and to carry on a general navigation, warehousing and transportation business. The incorporators are: C. A. Pope, G. Barclay, W. B. Scott, R. E. Moyse and A. A. Wanklyn, Montreal. The s.s. Hiawatha has recently been acquired from the Receivers of the Gilchrist Transportation Co., Cleveland, Ohio, and she has been transferred to the Canadian register under the name of Cabotia. She was built in 1880, and is equipped with fore and aft compound engines of 700 i.h.p., supplied with steam by a Scotch boiler 12 by 12½ ft. at a pressure of 125 lbs. Her dimensions are: length 234 ft., breadth 36 ft., depth 20 ft., tonnage, 1,398 gross, 1,159 register.

Ontario and the Great Lakes.

The Welland Canal was officially opened for traffic for the season, Apr. 15.

The Governor General in Council has approved the regulations for the ferry across the Niagara River between Queenston, Ont., and Lewiston, N.Y.

The name of the steamboat Robert Girdwood Allan Weaver, registered at Toronto, has been changed by order in council to R. G. A. Weaver.

Forwarders, Ltd., Kingston, which owns the steamboat Port Colborne, is adding another vessel to its service, which it is hoped to have ready for June, and which will be named W. H. Dwyer.

Dredging was commenced in Hamilton Bay, Apr. 12. This is a portion of the general improvement works there which the Government has undertaken, and for which appropriations have been made.

The Toronto Harbor Commission will shortly issue bonds amounting to $1,000,000, guaranteed by the city, for reclamation work at Ashbridges Bay and the general improvement of the factory district. The Commission has power to issue bonds for $12,000,000.

A press dispatch from Kenora, Apr. 13, stated that the Dominion Government had decided to comply with the request of that town for the construction of a lock and dam at Ash Rapids. It is said that a survey will be made as soon as possible, and estimates submitted.

The Lake Carriers' Association, the U.S. organization controlling vessels on the Great Lakes, has decided to continue the wage scale in force in 1912, and to adopt the three watch system for firemen on all vessels owned by members. This system was in vogue on some of the vessels last season and proved a success.

The Northern Navigation Co.'s new vessel is to be launched at Port Arthur, May 24. Though the name has not been definitely decided on, it is probable that it will be Noronic, a combination of the chief letters of the names, Northern Navigation Co., Richelieu and Ontario Navigation Co., and Inland Co.

The Imperial Oil Co., Sarnia, Ont., has transferred its steamships Imperial and Iocoma, from the British to the Canadian register. They were built at Willington Quay, Eng., and Dundee, Scotland, in 1898 and 1912, respectively, the former being 796 gross tons, and the latter, 1,669 gross tons.

Canadian owners of vessels on the Great Lakes have secured more favorable rates for marine insurance, owing to the Canadian Lake Protective Association's efforts. The underwriters have agreed on a 4¾% rate for the upper lakes, 5¾% to Ogdensburg, N.Y., and 6¾% to Montreal for fleets with approved records.

Canada Interlake Line, Ltd., which recently acquired the steamships Kenora, Regina and Tagona, from the Canadian Lakes Transportation Co., has transferred them from the British register to the Canadian register. The three are sister vessels, and were built at Dumbarton, Scotland, the first two in 1907, and the last, in 1908.

Navigation opened on Lake Ontario, Apr. 1, when the Richelieu and Ontario Navigation Co.'s s.s Macassa left Toronto for Hamilton. The first vessel to enter Toronto harbor, from an outside port, the captain thus winning the silk hat awarded by the harbor master, was the Niagara, St. Catharines and Toronto Navigation Co.'s s.s Dalhousie City, which arrived Apr. 2.

The Toronto Harbor Commission announced recently that contracts will be awarded during May, for the construction of a breakwater in connection with the general scheme of waterfront improvements. A. C. Lewis, Secretary, is reported to have stated that plans were well under way, and it was anticipated that a considerable portion of the work would be done this season.

It is reported that Jas. Whalen, Port Arthur, has acquired the ice breaking steamboat St. Ignace, from U.S. owners. This vessel has been in use in Lake Michigan for some years, and has been successfully used for ice breaking purposes. She has been taken to Sault Ste. Marie, and equipped with wireless telegraphy, and will be employed in Thunder Bay during the winter months.

The steamboat Jessie Bain, owned by the Richelieu and Ontario Navigation Co., and recently acquired in the taking over of the Thousand Island Steamboat Co., has been sold to Capts. Hanelin and Brunelle, Champlain, Que. She was built at Clayton, N. Y., in 1888, and is screw driven by engine of 14 n.h.p. Her dimensions are: length 70.8 ft., breadth 14.8 ft., depth 5 ft.; tonnage, 67 gross, 41 register.

The steamships Saturn and Uranus, recently bought from the receivers of the Gilchrist Transportation Co., Cleveland, O., by the Algoma Central Steamship Line, as mentioned in a previous issue, have been transferred to the Canadian register and renamed Frater and Franz, after the Vice President of the company, J. Frater Taylor, and the Vice President and General Manager, W. C. Franz, respectively.

The Ojibway and Detroit Ferry Co., Ltd., has been incorporated under the Dominion Companies Act, with $500,000 capital, and office at Sandwich, Ont., to operate a ferry between Sandwich, Ont., and Detroit, Mich., and in connection therewith, to own and operate steam and other vessels, wharves, docks, piers, etc. The incorporators are: R. J. McRae, L. H. Coombes, A. U. Gulliford, T. H. Kilgore and M. Gordon, Toronto.

[illegible] the collision between the s.s. Curry, owned by W. A. and A. H. Hawgood, [illegible] Ohio, and the Meaford Transportation Co.'s s.s. Bothnia, [illegible] 23, 1912, in which the Bothnia was sunk in the St. Clair River, just above Star Island, judgment was delivered in the U.S. Court, Detroit, Mich., Apr. 8, when the sole responsibility for the casualty was placed on the S. S. Curry. The Meaford Transportation Co. sued for $28,000 for the loss of the vessel, the cargo and the crew's belongings.

The U.S. Lake Survey reports the levels of the Great Lakes, in feet above tidewater, for March, as follows:—Superior, 601.54; Michigan and Huron, 580.16; Erie, 572.44; Ontario, 246.71. Compared with the average March levels for the past ten years, Superior was 0.16 ft. below; Michigan and Huron, 0.03 ft. above; Erie, 0.66 ft. above, and Ontario, 0.91 ft. above. It was anticipated that Superior would remain stationary during April, and that Michigan and Huron would rise about 0.3 ft., and Erie and Ontario about 0.6 ft.

The Richelieu and Ontario Nacigation Co. has taken over the Lake Ontario and Bay of Quinte Steamboat Co., which owns the steamboats Caspian and North King, operating from the Bay of Quinte to Thousand Islands and Rochester, N.Y., and a local service in the Bay of Quinte, between Kingston and Belleville. The Caspian was built at Kingston in 1846, and is a paddle wheel steamboat, with engine of [illegible] n.h.p., her dimensions being: length 177.6 ft., breadth 43.4 ft., depth 6.7 ft.; tonnage, 957 gross, 543 register. The North King was built at Montreal in 1868, and remodelled at Kingston, in 1891, and is paddle wheel driven by engine of 500 n.h.p., her dimensions being: length 175 ft., breadth 43 ft., depth 10 ft.; tonnage, 873 gross, 499 register. E. E. Horsey, heretofore General Manager, has been appointed Assistant to the Manager, Western Lines, Richelieu and Ontario Navigation Co., with office at Kingston.

The Peoples' Steamboat Co.'s s.s. Frontier was sold, Apr. 19, at Toronto, by order of the Admiralty Court. This vessel has had a chequered career. At one time known as Empress of India, she was built at Mill Point, Ont., in 1876, and was owned by the Lake Ontario Navigation Co. of Picton, Ont. She was partially rebuilt at Picton in 1899, and her name changed to Argyle. The Lake Ontario Navigation Co. was wound up in 1908, and the vessel, which was practically the company's only asset, was sold under an order of the court. The Argyle Steamship Co., Ltd., was formed later at Toronto, to operate her, and after some difficulties, was also wound up, and The Peoples' Steamboat Co., Ltd., was incorporated in 1912, under the Ontario Companies Act, with $150,000 capital and office at Toronto, to take over the business, with the intention of running the vessel on the Niagara route, between Toronto and Lewiston, N.Y. This was done for the latter portion of the season, and just before the close, she was towed to Port Dalhousie in almost a waterlogged [illegible] The company has been suing the owners of the dock at Port Dalhousie for damages, alleging neglect on [illegible] the outcome of this action. During the portion of 1912 that the vessel was oper[illegible] length 151 ft., breadth 26 ft., depth 9.7 ft.; tonnage, [illegible] with engine of 274 i.h.p., driving paddle [illegible]

Manitoba, Saskatchewan and Alberta.

The Hyland Navigation and Trading Co.'s steamboat Bonnitoba was reported to have broken from her moorings in the Red River, and to be drifting down the river in an ice jam, and to have partly sunk, Apr. 10.

The Dominion Department of Marine and Fisheries received tenders to Apr. 25, for the construction of a steel wood sheathed twin screw steamboat to act as a patrol vessel, and of the following dimensions, length between perpendiculars 140 ft., breadth moulded 26½ ft., breadth extreme 27 ft. 0¾ in., depth moulded 13½ ft., with engines of 900 i.h.p. She is to be delivered at Selkirk, Man.

British Columbia and Pacific Coast Marine.

The C.P.R. s.s. Princess Sophia struck a rock at Sentinel Island, Apr. 13, tearing a large hole in the bow. She proceeded to Vancouver under her own steam.

The fishing vessel Bonita, owned in Tacoma, Wash., and seized by the Dominion Government for poaching in B.C. waters in July, 1912, has been ordered forfeited to the Government.

The work of removing the Parthia shoal, off Brockton Point, Vancouver, which has been in progress for some time, has been completed, and a depth of 30 ft. at low tide is now reported over the spot.

It is announced that the C.P.R., which was to have had its s.s. Princess Mary lengthened by 40 ft., for the present season, has abandoned the idea until the autumn, owing to the necessity of having the vessel in service for the summer trade.

Twohy Bros., contractors for the construction of a portion of the Canadian Northern Pacific Ry., to the north of Kamloops, will during the season operate three steamboats on the North Thompson to facilitate the transportation of men and supplies.

The Minister of Marine in the House of Commons, Apr. 8, moved a resolution to incorporate the Vancouver Harbor Commission, vesting in it the control of all lands situated within the harbor limits, heretofore vested in the Government, and the revenues received therefrom.

The C.P.R. coast steamship Princess Sophia has been converted from a coal to an oil burner, making seven of the company's vessels using oil fuel. She is now running between Vancouver and Victoria in place of the s.s. Princess Alice, and during the summer will run on the Alaska route.

Contracts are reported let in the United States for the steel work in connection with the dry dock for the G.T. Pacific Ry. terminals at Prince Rupert, and also for the reinforced concrete power house and for the superstructure of other buildings to the Wineland Building and Engineering Co., Vancouver.

C. Gardner Johnson and Co. have been appointed agents for the Hamburg-American and East Asiatic Steamship Cos., at Vancouver. These companies are utilizing the Johnson Wharf Co.'s dock and warehouses, at present, and we are officially advised that there is no truth in the recent reports that either of the steamship companies, nor the Johnson Co., is negotiating for waterfront properties at Vancouver or Victoria.

Forager Transportation Co., Ltd., has been incorporated under the British Columbia Companies Act, with $10,000 capital and office at Victoria, to acquire the steamboat Forager, and to own and operate other vessels and conduct a general transportation business. The Forager was formerly owned by Steamer Forager, Ltd., Victoria, and is a screw driven vessel with engine of 13 n.h.p., her dimensions being, length 84ft., breadth 18.8 ft., depth 6.6 ft.; tonnage, 90 gross, 57 register.

A recent press dispatch from Victoria stated that D'Arcy Tate, Vice President, Pacific Great Eastern Ry., has announced that as soon as the company is able to operate trains from Newport easterly, it is intended to establish a direct steamship service connecting the mainland with the Vancouver Island, and that in the near future it is intended to operate a daily steamship service calling at Vancouver, Victoria and Seattle, ultimately extending to Tacoma, Puget Sound ports and San Francisco.

The American Yukon Navigation Co. has recently been incorporated in West Virginia to operate steamboats on the Yukon River between Dawson, Yukon and Fairbanks, Alaska, in conection with the British Yukon Navigation Co.'s steamboats, both lines forming portions of the White Pass and Yukon Route. Two steamboats are in course of construction at Seattle, Wash., to be named Alaska and Yukon respectively. These will be dismantled at Seattle and shipped to White Horse, Yukon, where they will be assembled and made ready for service by about June 1. They will be the most up to date boats on the Yukon. The U.S. Government recently declared Fairbanks to be a subport of entry for Canadian bottoms, and this will allow the British Yukon Navigation Co. to run its vessels between Dawson and Fairbanks should the trade warrant it.

Canadian Notices to Mariners.

The Department of Marine has issued the following:—

60. Mar. 18. British Columbia, Vancouver channel, Channel Rocks, gas and eastern channel, Channel Rocks, gas and whistling buoy to be established.

61. Mar. 18. British Columbia, chart of Arthur and Telegraph Passages issued.

62. Mar. 18. British Columbia, Chatham Sound, Holland Island, fog alarm established.

63. Mar. 18. British Columbia, Queen Charlotte Islands, Hecate Strait, Skidegate Inlet, eastward of Deadtree Point, amended characteristic of gas buoy light, off Lawn Point, change in position and color of gas and bell buoy, spar buoy to be established.

64. Mar. 18. United States of America, Strait of Georgia, Haro Strait, Patos Islands light station, Alden Point, fog signal to be temporarily discontinued.

65. Mar. 19. New Brunswick, south coast, Bay of Fundy, Chignecto Channel, Cape Enrage, bell buoy to be established off Long Reef.

66. Mar. 19. Quebec, River St. Lawrence, Rimouski, hand fog horn at light station.

67. Mar. 19. Quebec, River St. Lawrence, Quebec, permanent back range light.

68. Mar. 19. Quebec, River St. Lawrence, ship channel between Quebec and Montreal, Roche a l'Ocean, gas buoy established.

69. Mar. 22. Quebec, River St. Lawrence, mouth of Saguenay River, Prince Shoal lightship No. 17 to be replaced by lightship No. 7.

70. Mar. 22. Quebec, River St. Lawrence below Quebec, Traverse of St. Roche, lower end, lightship No. 7 to be replaced by lightship No. 19.

71. Mar. 31. Ontario, Lake Ontario, Kingston harbor, rearrangement of buoys marking Carruthers shoal and Frederick shoal.

Canadian Railway and Marine World.

June, 1913.

Canadian Northern Railway Dynamometer Car.

One of the best investments made by the Canadian Northern Ry.'s mechanical department is a dynamometer car built in its Winnipeg shops early last year for testing the motive power on its western lines.

The exterior of the car is shown in fig. 1, and the floor layout and interior arrangement in fig. 2. It is a converted passenger car of the older type, the interior arranged for the convenience of the operator, and as a business car for the mechanical department. The designs were all prepared under the supervision of S. J. Hungerford, Superintendent of Rolling Stock, from whom the following information was obtained.

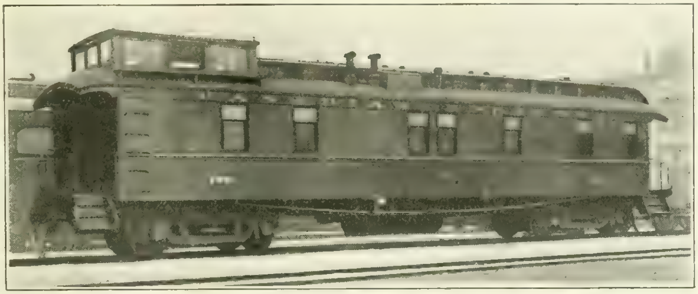


Fig. 1.—Canadian Northern Railway Dynamometer Car.

The dynamometer draft gear is shown in fig. 3. The body of the old car has been reinforced by building into the underframe two 15 by 6 in. I beams, extending the car length, to which the draft gear at both ends is attached. These beams are spaced 26 ins. apart between the webs, as shown in fig. 3. Between the web is attached a section of ¾ in. plate, 44⅛ ins. long, the edges of which are flanged, and secured to the webs of the large I beam by twenty two ⅞ in. rivets on each flange. To the under side of this plate is secured the dynamometer draft rigging, nesting between two 12 in. channels, the backs of which are 14¼ ins. apart. Three under brackets across between the lower flanges of the large I beams support the channels from the bottom, forming a rigid box construction.

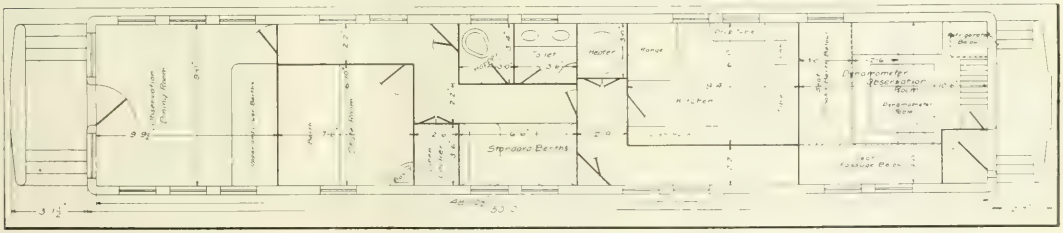


Fig. 2.—Floor Plan and Interior Arrangement of Dynamometer Car.

The coupler and yoke are of the usual type, carrying two spring plates, between which are the usual nested coiled springs. All this portion is of standard construction. Along the sides of the coupler yoke are the two arms of a heavy U connector piece, inward lugs on the latter forming bearings against which the spring plates bear, carrying the pull or push from the coupler into the U connector, all as shown in the plan view, fig. 3.

Through the base of the U, passes a piston rod, secured to the U by a block on the inside, through which passes a tapered key pin, securing the U connector to the piston rod. The location of the cylinder is shown in this same view, and the construction in fig. 4. The construction allows for cylinder flanges, by which means the cylinder is attached to the webs of the body I beams.

The cylinder is an iron casting, bored to a 16½ in. diameter, with a central 15 in. portion 16 in. diameter, in which the piston fits. The piston is 12 ins. long, containing six ¼ by ¼ in. annular grooves around the outside for fluid packing. The cylinder and piston are ground into each other, making a snug working fit, the fluid packing proving ample, with the long contact surface and snug fit. The fit is such that the friction is small.

The piston rod from the U connector is 4 in. diam., and at the front end of the cylinder, 2½ ins. Both ends pass through the heads in packed bushings, 9 ins. long, the heads being secured to the cylinder ends by twenty 1¼ in. studs.

Friction throughout the draft rigging is eliminated as much as possible. Under both legs of the U connector are two 8 in. rollers, each pair being carried on a shaft in bearings on the under side of the side channels, the weight of the yoke, coupler and spring plates being carried by the same means.

In the plan view of fig. 3 it will be noticed that there are side lugs attached to the inner face of the side channels, near the ends of the normal position of the U connector; these lugs are shown in section. When the dynamometer is not in use, double pins are placed between the ends of the U connector and these lugs, holding the U connector in its normal central position, the pull or push being taken up by the springs inside the yoke in the usual manner, the dynamometer cylinder arrangement being made dead. When the dynamometer is in operation the springs in the yoke are useful in taking up sudden shocks, relieving the cylinder, but in no way affecting the readings.

From the ends of the oil cylinder there are pipe connections to the dynamometer room in the car. On the floor of the car there is located a pump for pumping the cylinders full of oil, with a by pass between the cylinder ends, connected to the pump, by means of which the oil can be shifted from one end to the other, when after a long run, the leakage around the piston has been found to be sufficient to bring the piston too near one end. The customary practice in centering the piston, when leakage has shifted its position, is to open the by pass, and have the locomotive pull or push on the drawbar, shifting the piston back to normal, the by pass being then closed. In summer the oil used is dynamo oil, and in winter equal parts of dynamo and signal oils.

The dynamometer observation room, as shown in figs. 1 and 2, is in an elevated position at the dynamometer draft gear end of the car, similar to the cupola of a caboose, the floor of the room being at as high an elevation as the clearance limits of the car will permit, there being just standing room, with a close clearance for outside obstructions over the top of the cupola. All four sides have observation windows for outside inspection. The room is reached by a short tier of steps at the end of the car.

In the centre of the room is the dynamometer table, shown in fig. 5, the top of which is shown in fig. 6. On the top of the table is the dynamometer recording apparatus, the main part of which is shown in fig. 7. It will be observed that integral

In a solid cast frame there are two small cylinders, bored to a diameter of 0.796 in., giving an area of ½ sq. in. These cylinders connect through the pipe connections mentioned to the ends of the dynamometer cylinder. Both cylinders are single ended, opening towards each other.

Between the two cylinder bores is an aluminium piston rod, the ends of which are turned, and brass piston sleeves fitted thereon. These sleeves are turned with four packing grooves, 1-64 in. deep. At the centre of the piston rod there is a type of crosshead, connected to it by a wrist pin, the outer ends of the cross head attaching to connecting rods which pass alongside each cylinder to cross heads at the rear of each cylinder. Between each crosshead and the cylinder head are calibrated indicator springs, so that the distance of piston displacement due to oil pressure is a measure of that pressure to a scale dependent on the calibration of the springs.

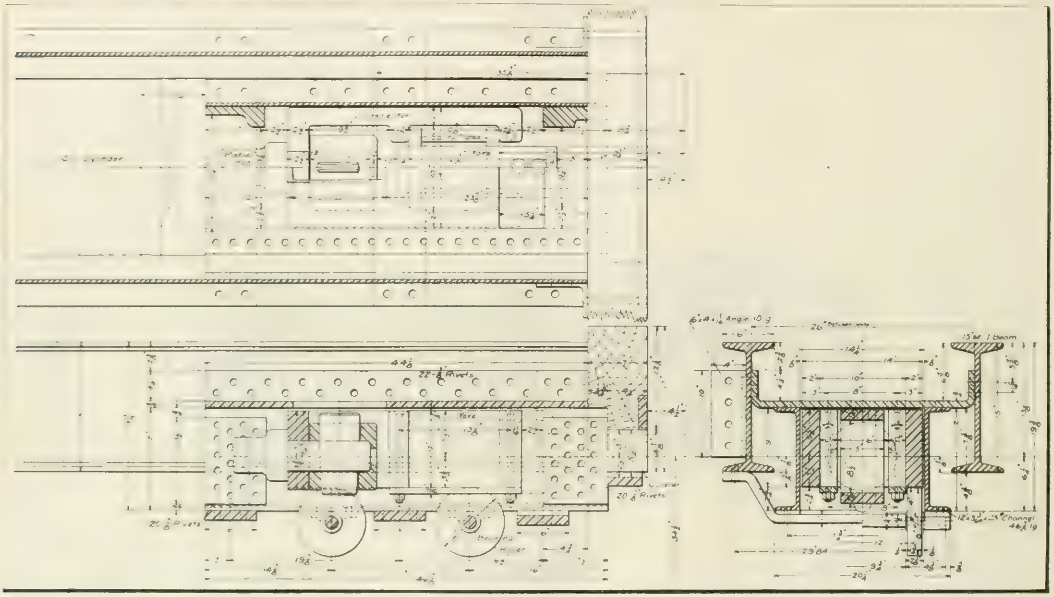


Fig. 3.—End Construction and Draft Rigging of Dynamometer Car.

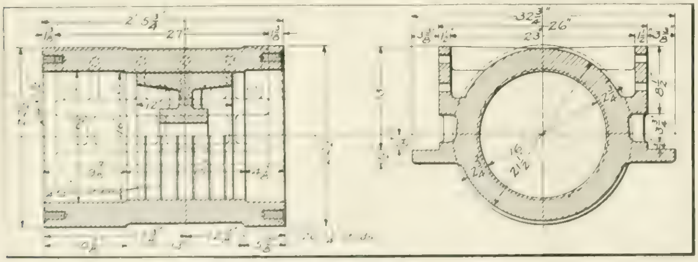


Fig. 4.—Oil Draft Cylinder of Dynamometer Car.

The springs at each end only operate one at a time, depending on the end of the dynamometer cylinder in compression. Through a pantograph movement a stylograph pen on the outer end of an arm multiplies the extent of the piston displacement, marking the same on a sheet of paper that passes continuously over the top of the recording table.

As mentioned, a sheet of paper can be put in continuous motion over the face of the table under the recording pen. The mechanism that moves this paper is shown in fig. 5. On one of the axles of the four wheel truck there is mounted a 4 groove rope pulley, with a corresponding wheel mounted on a shaft on the frame of the recording table. Four spring belts pass around both wheels, passing up through a box opening in both main and dynamometer room floors. The motion of this frame wheel is in consequence dependent directly on the speed of the car.

The carrying shaft is connected by a universal joint to a short worm shaft, the end furthest from the universal joint being carried in a bearing that can be moved through a small arc, and clamped in any of its positions by a clamp lock. By this means it can be brought in or out of engagement, with a worm wheel directly beneath it, a pinion on the same shaft as the latter meshing with another gear on a lower shaft, this latter shaft carrying between the frames a recording paper roll. On the rear part of the table frame is another paper roll, carried on a shaft on bearings on the rear legs. A friction brake regulates the movement of this roll, and prevents it from unrolling too rapidly. From this roll the paper passes up over a roller, the top of which is flush with the table top, thence forward on the table, and over a similar roller, and down on the front paper roll, on which it is wound by the worm mechanism, which can be thrown in and out at will.

The paper passing over the table is to be seen in fig. 6, all the recording apparatus being shown there also. On the pantograph arm is the pressure recording pencil. To the rear is an indicating pressure gauge, connected in with that end of the pressure recording cylinder, the dynamometer cylinder pressure being there indicated for that end of the cylinder. At the near end, under the table, is another gauge, for indicating the pressures on the other end of the cylinder. The opposite end, being that most used, is placed on the table in a conspicuous place, and can be read in conjunction with the paper records.

In front of the rear gauge there will be noted an electrical ticker, similar to a telegraph instrument, consisting of a double electromagnet, in front of which is a hinged flapper, the lower end of which is also hinged to a rod running across the table, to which two pens are attached, in adjustable positions, for marking two datum lines on the moving paper.

In the front of this rod is another cross rod connecting a gauge in the foreground with the black box in the left background. The latter is a speed recorder, connected through a long spring belt with a pulley on the truck axle. A flexible cord in the speedometer connects with this front cross rod, the near end of the cross rod connecting with the gauge in the foreground, this gauge indicating the speeds on the dial face. The speeds are also recorded graphically by a stylograph pen attached to the cross rod.

The pens on the rear cross rod are so adjusted as to give datums for the pull on the far side of the paper, and for the speed on the near side of the paper. The electrical attachment on the far end of this rod is connected with a push button on each side of the cab, so that the observer at the car side, on approaching a mile post, presses the button, the hinge of the electrical apparatus flapping, drawing the datum pencils towards it momentarily, a spring forcing them back to normal position on the release of the button, the jog in the datum thus made forming the mile post indication.

Both speed and pull are recorded on the paper to a known scale, but in operation, as a double check, it is the practice to mark the pressure and speed indicated on the indicating gauges on the paper at the same time that the number of the mile post is marked opposite the datum jog. Intermediate points are also pencilled down on the paper, where the table observer notes any points in the traced curves that he wishes to record. Memoranda can also be written down in the margin at the same time. For this purpose, and to observe the paper as it passes over the table for the greatest period of time, there is a glass plate let into the table face near the front edge, under which the paper passes. The pressure, as given by the indicating pressure gauge, is in lbs. per sq. in., and in order to interpolate into the drawbar pull, this must be multiplied by the area of the dynamometer cylinder, which, for the forward end, is 188 sq. ins.

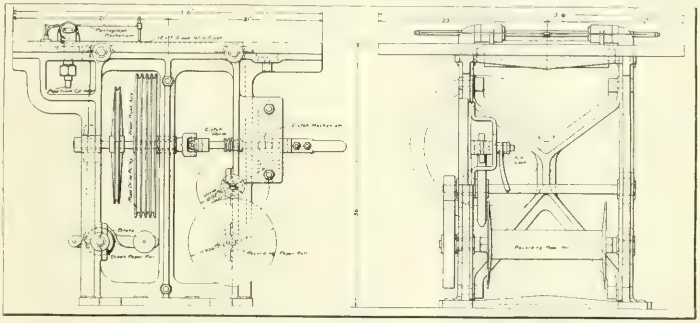


Fig. 5.—Dynamometer Table with Throw In Apparatus.

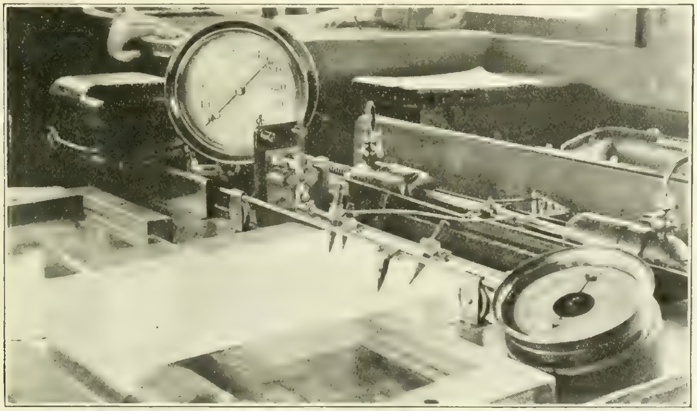


Fig. 6.—Top of Dynamometer Table, with Indicating Apparatus.

The wisdom in constructing such a car was soon demonstrated by a few trial runs over different divisions of the system. The tonnage rating of nearly all the locomotives was found to be far too low, and with the information gleaned from the observations made, the loading was increased in a great many instances. Practically every one of the many C.N.R. lines through the west have been gone over with the different locomotives used on the division, and the maximum rating over each section, for each of the different locomotives, determined. This information on each of the divisions is placed in the hands of the locomotive foreman, so that he now knows exactly what loading each locomotive can be given to obtain its maximum efficiency, when an order for a locomotive is given him by the operating department.

One advantage of steel interior finish on steel passenger cars, is that the finish can be made up in special shops and rapidly assembled in the car, instead of the slow method of cutting and fitting as followed for wooden interior finish.

Victoria Rolling Stock and Realty Co. of Ontario, Ltd.

The annual report for the year ended Feb. 15 says that during the year the company did not issue any new debentures, and outstanding debentures against leases were reduced by $160,000. All payments maturing during the year were promptly met. The profit on the year's business after charging up directors' fees and expense account, was $31,386.45, out of which a dividend of 6% per annum on the paid up capital stock was paid, amounting to $14,400, leaving $16,986.45 carried forward to profit and loss account, which now stands at $67,486.56.

ASSETS.

Obligations on leases	$ 906,741.66
Debentures held by company and accrued interest	24,536.13
Cash in bank	104,208.77
Call loans	240,000.00
	$1,275,486.56

LIABILITIES.

Capital stock subscribed..$600,000.00	
Capital stock paid up	$ 240,000.00
Debentures outstanding	960,000.00
Interest accrued on same	8,000.00
Balance at credit of profit and loss	67,486.56
	$1,275,486.56

PROFIT AND LOSS ACCOUNT.

Balance at credit of profit and loss account, Feb 15, 1912	$ 50,500.11
Rents received and accrued on leases and interest on advances and debentures held by company	77,312.52
	$127,812.63
Interest paid and accrued on debentures	$ 43,756.57
Expense account	869.50
Directors' fees last year	1,300.00
Dividend account	14,400.00
Balance carried forward	67,486.56
	$127,812.63
Original cost of rolling stock held under existing leases	$2,939,370.00
Amount paid in on account by railway companies in addition to interest	1,979,370.00
	$ 960,000.00
Total amount of the company's debentures outstanding	$ 960,000.00

The directors for the current year are:—Sir Edmund B. Osler, President; W. D. Matthews, Vice President; D. Coulson. Hon. J. S. Hendrie, F. G. Osler, D. R. Wilkie.

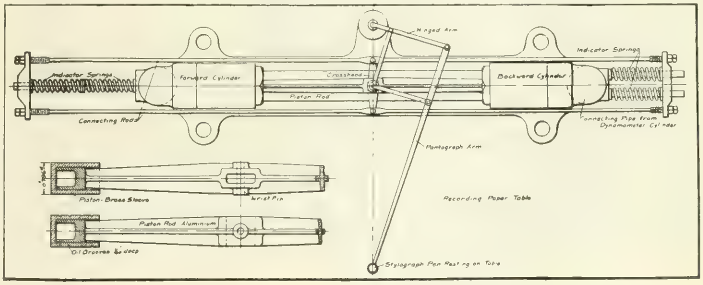


Fig. 7.—Indicating Oil Cylinders with Pantograph Mechanism.

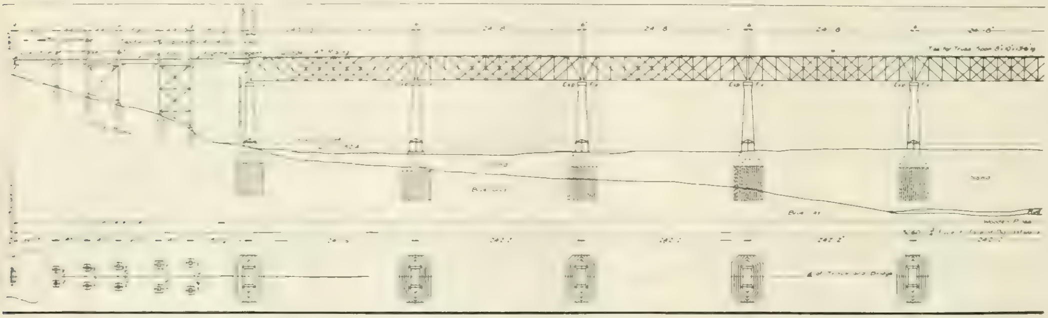
The theory of the collapsible vestibule is that in the event of a collision the closing up of the car bodies through the depth of of the vestibule gives the cars that much extra shock-absorbing space, amounting to approximately 8 ft. between each pair of cars, removing to a large degree the shock and resulting damage to the car body and the human load.

Canadian Pacific Railway Bridge at Outlook, Sask.

Early this year the bridge across the South Saskatchewan River, near Outlook, Sask., on the C.P.R.'s Moose Jaw northwest line, was opened to traffic. The bridge in its several stages of completion is shown in the accompanying illustrations.

The prairie on both sides of the river at this point is nearly at the same level, at an elevation above the river of over 100 ft. It was, in consequence, decided to build a high level viaduct across the river, at the level of the prairie, instead of making cuts on either side to bring the track level down nearer the river. This latter course would have necessitated heavy approaches in either direction, and it is questionable whether the heavy cutting required would have been any more economical from the standpoint of initial cost, apart from a consideration of the cost of operating trains over such a dip. The prairie level on both sides was such as to provide for a bridge with a maximum 0.4% rising grade from the west.

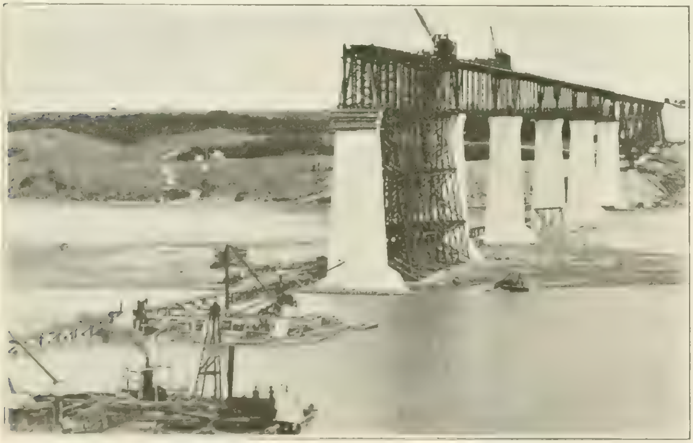
The central portion of the bridge consists of eight 240 ft. spans, on high concrete piers, with 45, 60 and 80 ft. shore spans, carried on bents. The concrete river piers are of a particularly heavy construction, and of a total height from the base of 125 ft. These were carried down to a sufficient depth to be free from frost and scour. The construction of these piers is shown in the accompanying illustrations.



C.P.R. Bridge Across the South Saskatchewan River at Outlook, Sask. (Continued on next page.)

All the river piers are carried on wooden piles, driven at a close spacing in the sand and clay of the river bed. The nature of the ground was such as to require extraordinary means in order to obtain a good foundation.

The river spans are all 240 ft. long, of the link pin construction, considerably lighter in design than is usual in present day work. This is accounted for by the fact that these eight spans are all from the company's old bridge across the St. Lawrence at Lachine, near Montreal. The new bridge at this latter point was rebuilt and double tracked last year, a description of the work appearing in Canadian Railway and Marine World for April, 1912. The old bridge was still in excellent condition, and did not require renewing, except for the fact that the line out of Montreal carries the heaviest rolling stock on the system, and the traffic is quite dense, requiring a double track bridge. So while the old bridge was not considered suitable for its former service it was quite adapted for a branch line. It has therefore been moved to its new location in the bridge under description.



Completed C.P.R. Bridge Across the South Saskatchewan River.

All the shore spans, save the three 80 ft. plate girders, one at the west and the other two at the east end of the bridge, are new, and have been designed to the latest main line specifications. The 80 ft. spans, like the longer river spans, come from the St. Lawrence bridge. The shore spans are carried on steel bents, resting on concrete foundations. The latter are carried on concrete piles, instead of wood piles as used in the river construction. Two lengths of new shore spans have been employed, 45 and 60 ft., the latter size bridging between the steel towers. The bents are of varying length to conform to the shore foundation.

At the east end of the bridge the elevation is 1,729.65, and at the east end, 1,717.63. The normal water level is 1,582.4. Thus the maximum elevation above the river at the west end is 147.25 ft., making the bridge one of the highest in Canada. With the total length of 3,004 ft., it is a bridge of considerable proportions.

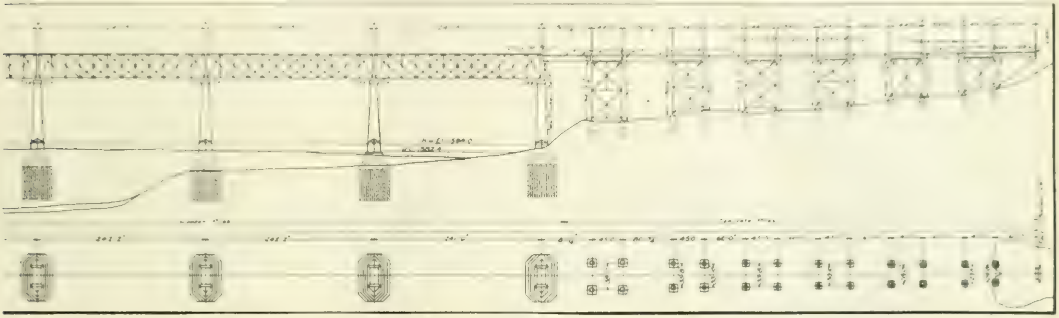
Work was carried on through the winter of 1911-12. The river foundations were sunk by means of caissons, and it was in the use of the latter that some difficulty was experienced. The caisson in the deepest part of the river was completely washed away by spring freshets, occasioning some delay. On the piles sunk in the caisson, the concrete was built up in moulds. The lower part occasioned no difficulty, but with the upper section it was necessary to construct high elevators to raise the concrete to the elevated forms. The work was not delayed by the winter weather, as the concrete moulds were encased with an outer wooden wall, with an intervening air space between the two walls. In this space were run steam pipes to keep the mould warm for the proper setting of the concrete in the extreme weather encountered in that northern latitude. The methods of conducting the work in warm weather are shown in the illustrations, as is also the system of false work for erecting the main link spans.

The designs for the bridge were made in the office of P. B. Motley, M. Can. Soc. C.E., Bridge Engineer, Montreal, and the constructional work was performed under the supervision of J. G. Sullivan, M. Can. Soc. C. E., Chief Engineer, Western Lines, Winnipeg.

A new axle train lighting system has been tried on the Santa Fe system, involving a number of radical departures. The inherent characteristic of the generator is that it gives the same polarity for either direction of rotation, eliminating the necessity for any pole changer. The variation in voltage is reduced to narrow limits and no lamp regulator is required. The system adjusts itself automatically to different conditions of load produced by variations of schedule or by change of season, so that no manual adjustment is required to meet these different service conditions. At the same time useless overcharge of the battery is eliminated, thus establishing conditions favorable to long battery life.

The Grand Trunk Railway's New Locomotive House at St. Lambert.

The locomotive house which the G.T.R. is building at St. Lambert, near Montreal, and which is nearing completion, will house 27 of the largest locomotives and will have adequate repairing facilities. The structure, which as a whole comprises round house, machine shop, boiler house, fan house, office and stores, castings store and sundry accessories, is built of concrete,


C.P.R. Bridge Across the South Saskatchewan River at Outlook, Sask. (Continued from last page.)

steel, brick, and timber, the whole on concrete foundations $2\frac{1}{4}$ ft. thick, carried down to solid rock, which is found about $2\frac{1}{2}$ ft. below natural ground line.

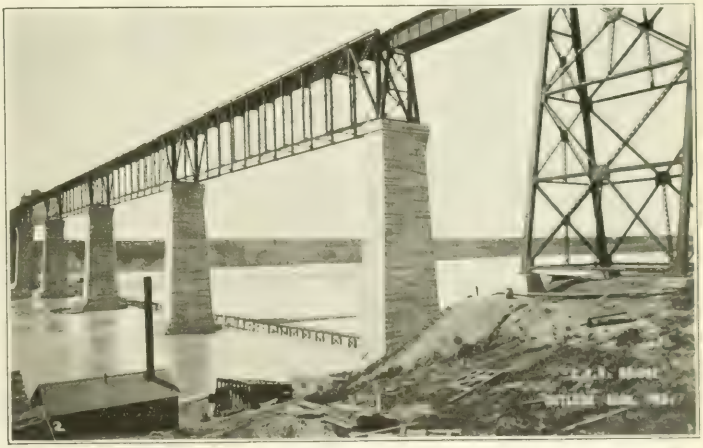
In addition to the main buildings, there are, of course, the necessary coaling station (a gravity fed plant of 500 tons capacity), sand house, drying plant, water col-

High Concrete Piers on New C.P.R. Bridge.

umns, etc. There are many incidental appliances auxiliary to the locomotive house, some of which are of quite new design, and in other cases the erstwhile standard patterns have been improved and brought up to date, including water columns, concrete pits for same, hot wells, and a model sanitary system and lavatory accommodation for employes.

The difficulties presenting themselves during the course of construction have been many and varied, particularly in the flux of water, both on and below the surface, in addition to which practically the whole site has been raised 7 ft. by means of a fill, to suit the grade of the St. Lambert yard. All the buildings were designed in the Chief Engineer's office, and the work was carried out under the supervision of J. C. Seyfriend, structural engineer, F. M. McGuigan Jr., being responsible for the layout and grading.

The St. Lambert freight yard when complete will be one of the largest on the G.T.R., and will accommodate 2,100 cars, the present accommodation being only 1,240. The yard is double ended, the tracks being duplicated on both sides of the main line, so that each branch gives room for



Construction Work on the New C.P.R. Bridge at Outlook, Sask.

60 cars.

Each of the 27 stalls of the locomotive house is furnished with a concrete pit, 66 ft. long, the walls being of sufficient thickness to allow for jacking, and in 4 stalls are furnished drop pits for driving and truck wheels.

Daylight is obtained from large windows, 14 ft. high by 11 ft. wide in series of 3 for each stall, and in the roof is fixed a continuous lantern light 5 ft. high, made to open in sections for ventilation. Fitted [illegible] a telescopic smoke jack, the hood of which can be [illegible] and lowered to fit the smoke stack of the locomotive, thus [illegible] the smoke and fumes being [illegible] to the open air.

At the centre of the radius of the round house is an 85 ft. diameter standard turn table, built by the Dominion Bridge Co., the concrete pit, etc., for same being constructed by the contractors. The turntable is operated by compressed air from the main air compressor.

The [illegible] of the main buildings are heated by air drawn through steam coils and heated and forced through ducts by a rotary fan which is installed in the fan house. The fan is about 12 ft. in diameter.

Entered through no. 1 stall is the machine shop and boiler room, about 155 ft. by 50 ft. of similar construction to the locomotive house, with a track the full length of the shop. A large concrete repair pit is also installed.

In the machine shop the motive power will be both electricity and compressed air, and it will be replete with machinery for speedy handling of overhauls and repairs. The castings store built in conjunction with the building will stock all the requisite parts, etc.

Along the entire length of the machine shop runs a concrete pit in which all the various ducts, pipes, etc., will be placed, with portable covers, thus giving easy access to the pipes.

The boiler room is equipped with two

200 h.p. vertical water tube boilers, which supply the steam for heating, also for operating the various auxiliary engines.

Coal is supplied by an inclined runway for the coal trucks, from which it is hoppered into chutes and gravity fed to the bunkers in the boiler room. The breeching, which is of brick and steel, is carried from the boilers through the end wall to a reinforced chimney stack 125 ft. high. The ashes are automatically hoppered by gravity to ash doors, from which they are conveyed by small trucks and a compressed air hoist, and sent up to the surface.

The water supply is derived direct from the St. Lawrence River, which is some 2½ miles away. On the river shore adjacent to the Victoria Jubilee Bridge is the pump house, which is of concrete and brick. The pumping plant comprises a duplicate set consisting of 1,500 gallons a minute double stage turbine pumps, each driven by a 40 h.p. squirrel cage motor.

The whole of the apparatus is to work automatically so as to require no attendance. The entire plant is installed by Allis-Chalmers-Bullock Co., of Montreal.

The main intake, which is a 10 in. flexible jointed pipe, is carried out to about 1,000 ft. from the river bank, where the suction valve is situated. From the pump house to the locomotive house site is laid a 10 inch cast iron heavy water main, which, together with its various branches, makes up about 3 miles of pipe.

The general contractors for the buildings, etc., are the John S. Metcalf Co., Ltd., Montreal.

Steel Passenger Car Construction.

By H. H. Vaughan, M. Can. Soc. C.E., M. Am. Soc. M. E., Assistant to Vice President, Canadian Pacific Railway.

The American Society of Mechanical Engineers devoted the evening of April 8 to the reading of papers and discussion on steel passenger cars, the arrangements being made by the Society's sub committee on railways. The introductory paper was contributed by Mr. Vaughan, who is a member of the society, as follows:

The advent of the steel passenger car has brought with it many new problems and an opportunity for more diverse opinions than any other change that has taken place in car equipment. The construction of the wooden passenger car developed along fairly uniform lines. The varieties of framing were few and the differences unimportant, while the introduction of steel platforms, wide and narrow vestibules, reinforced end and sill construction and similar improvements occurred gradually, and with practically similar designs on all railways. The change from wood to steel in freight car construction resulted in the abandonment of designs that had almost become standardized and the introduction of many new types, but in this case the principal problem, other than that of obtaining satisfactory designs, has been the extent to which it was advisable to use composite or all-steel construction.

In the case of the passenger car, the types to be employed will probably not be changed by the substitution of steel for wood. The increase in capacity that has taken place in freight equipment cannot be duplicated in passenger cars, and there appears to be no tendency at present toward any increase in length or carrying capacity. The questions that now confront us relate rather to the design and construction of cars of the present type and of the materials that may be advantageously employed in place of the wood which has been used for so long. They are complicated by the necessity of providing for greater safety for the passengers than was secured in the wooden car, with an equal degree of comfort and the difficulty of anticipating the behaviour of this new equipment in case of accident. Certain difficulties such as the best systems for heating, lighting and ventilation, are common to both steel and wood construction, and improvements in these matters pertain to general progress rather than the use of steel construction. The following list, while probably incomplete, outlines in a brief way the important variations that must be considered in deciding on the preferable construction of steel passenger equipment:

Framing	Steel underframe	
	All steel frame	Centre girder Side girder
Outside finish	Plated. Sheathed.	
Roof construction...	Clerestory. Circular.	
Inside finish	Steel. Wood	
End construction....	Design and strength.	
Floor	Design and material	
Insulation	Material.	

No doubt questions of equal importance have been omitted, and in many cases those mentioned require careful consideration with regard to degree, as for instance, the strength of the framing or the thickness of the insulation. The list illustrates, however, the diversity of possible solutions of the preferable steel passenger car, and the following personal opinions are presented for the purpose of opening the discussion:—

The steel underframe does not appear to be a satisfactory or permanent development. There is but little saving either in weight or cost over the all steel construction, and it is difficult to see how the same strength in case of accident can be obtained. Experience will show whether the wood superstructure can be secured in such a way as to prevent working as the car gets old, but as it cannot be arranged to carry any weight this appears questionable. It can hardly be regarded except as an intermediate step between all wood and all steel construction.

In all steel construction the side girder car presents advantages, but as in freight construction, both types will probably persist. The side girder construction obtains greater strength in the side framing without superfluous weight, and it is possible that greater framing strength may prove necessary. With equal strength of side framing the side girder car may be made lighter than the centre girder type, and the weight of steel passenger cars is one of the most serious problems to be faced by any railway not having a level line. American passenger equipment was already excessively heavy per passenger carried with wood construction, and the use of steel has increased this weight from 10 to 20%, which is a most serious matter. Apparently side girder cars as so far constructed have a decided advantage over the centre girder type in their light weight and greater strength in case of accident tending to crush in the side of the car. This will probably lead to the use of this type on roads on which weight is of importance.

In spite of the many advantages of the sheathed car in case of construction and maintenance, it appears that the cost and weight of the additional metal will prevent its extensive use. This question is chiefly one of appearance and convenience, and is of minor importance.

The circular roof has been extensively introduced on steel passenger cars on account of its lightness and simplicity of construction. It has the objection that deck sash ventilation cannot be employed. The Pullman Co., while using the clerestory roof has, however, discontinued the use of deck sash ventilation, so that evidently in its opinion this objection is not important. The deck sash is, however, of value in a standing car, and when properly screened is certainly advisable in hot weather, especially when the road is dusty. The C.P.R. has compromised on this question and is using a roof of approximately circular form with deck sash. The strength and simplicity of the circular roof is retained, with the ventilating qualities of the clerestory type.

The preferable material for inside finish is a matter for future decision. With the ample protection afforded by a steel car against accident, there does not appear to be any objection to wood inside finish, on the ground of safety. It is more ornamental than steel and a better insulator. Probably on no question in passenger car design is opinion so divided amongst both railway and carbuilders. There is today very little difference in cost, and it certainly appears probable that in the future the tendency will be to adopt steel interior finish if not entirely, at any rate to a great extent.

The construction of the ends of the cars has received considerable attention, and the strength now usually employed is enormously greater than anything attempted in wood construction. Several excellent designs have been devised, which will probably be referred to in another paper.

The floor construction in steel cars is entirely different from that in wooden cars, and is usually of metal covered with a flexible cement. In constructing a sample car for the C.P.R. the writer used in addition an underfloor covered with insulating material, and covered the cement with ½ in. of cork. This car was also exceptionally well insulated at the sides, 2 ins. of cork being used next the outside plating. Tests during the past winter have shown that this car is actually warmer than the ordinary wooden car, the same amount of heating surface being used in both types. The floor was tested by taking the temperature of water standing in cans on the floor, there being no practical difference between the results in the wood and steel cars. The question of insulation is an important one, both in hot and cold weather, and while other insulation might no doubt be equally effective, it is interesting to be able to advise that with proper insulation there is no question of the steel car being satisfactory.

Other papers were read as follows:—Problems of steel passenger car design, roof structure for steel cars, suspension of steel cars, six wheel trucks for passenger cars, steel interior finish for steel passenger cars, painting of steel passenger cars, provisions for electric lighting in steel passenger cars, provision for electrical equipment on steel motor cars, air brakes for heavy steel passenger cars, cast steel double body bolsters, platforms and end frames for steel cars, underframes for steel passenger cars, special ends for steel passenger cars.

Argentina had 19,240 miles of railway at the end of 1912.

Railway Mechanical Methods and Devices.

Air Operated Bulldozer at the Grand Trunk Railway Port Huron Shops.

At the G.T.R. car shops at Port Huron, Mich., air operated bulldozers are in use, satisfactorily substituting power driven machines of larger proportions on certain classes of work, principally that of a lighter nature, although the size of some of the pieces handled is rather surprising.

One of the machines in the Port Huron shops is shown in the accompanying two illustrations. A cast iron base frame carries at the rear three passenger car air cylinders, ranged side by side with the attaching surface, secured to a corresponding face of the supporting frame. On the front end of the frame there is attached a large surface plate of cast iron, on which the bulldozer tools are guided. The bulldozer head has a guiding lug on each side, which passes down under the side of the table top for guiding laterally. The three air plungers are all attached to the rear of this head and act simultaneously, causing a uniform pressure to be exerted across the width of the table. This distribution of pressure makes a lighter construction of head possible. The machine is operated through the vertical lever to the rear, to which is attached an extension rod for the convenience of the operator when in front of the machine.

Fig. 1 shows the machine set up for making car steps. The male part of the die is attached to the table as usual, and the female part to the bulldozer head, the red hot bar when placed between the two being bent around the form of the male die. When in this position, as shown in fig. 2, the sides of the partially completed step are secured in position on each side by the vertical tongs, over the handles of which are slipped retaining rings. An operator on each side, with a U ended tool, seizes the projecting ends and twists them down through a quarter circle (a little further down than the position shown). These tools being then removed, the ends are hammered down flat on the table, producing the standard car step familiar to all. This process of making the steps is unique, but shows the scope and possibilities of the machine.

This particular machine is used for all sizes of work, including such heavy and awkward pieces as coupler pockets, which it can easily bend around to shape. It is also used with a special jig for upsetting the ends of brake rods, which were formerly made by welding a section of larger stock on the end of the rod. The law prohibiting this practice, it was found possible to make a good upsetting job on this machine.

Smaller sizes of bulldozers, using two instead of three cylinders, are also made up, the cylinders in this case being smaller, handling the lighter class of work, leaving the heavy for the larger machine. Both kinds make a very satisfactory substitute for mechanically driven bulldozers.

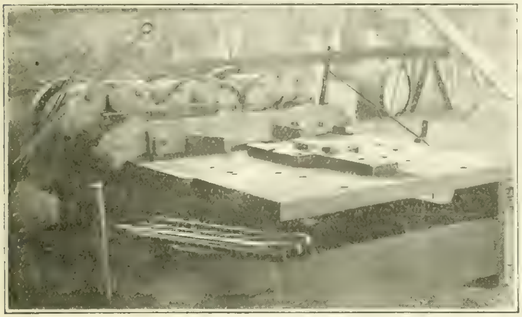


Fig. 1.—Air Operated Bulldozer of Powerful Design.

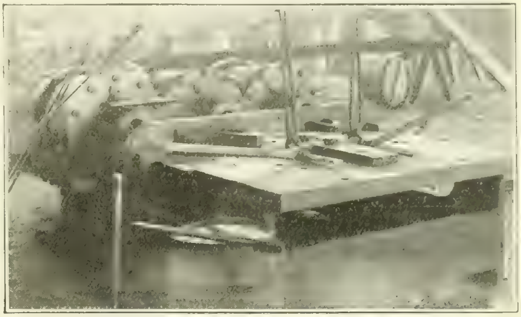
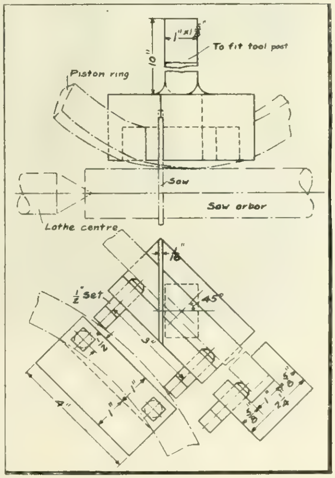


Fig. 2.—Bulldozer Forming a Car Step.

Cutting Piston Rings at the Grand Trunk Railway Stratford Shops.

The practice of making piston rings out of cast iron rings slightly larger than the bore of the cylinder into which they are to fit, and cutting out a small diagonal piece so that the ring might compress to give the required diameter, and the ring be thus given the necessary spring to keep it at all times snugly sprung out against the cylinder wall, is familiar to all who are in touch with steam engine practice. Ordinarily, this small section removed to give the spring is cut out with a hacksaw, the ring being held for the purpose in a bench vise.



Jig for Cutting the Spring Gap in Piston Rings

At the G.T.R. locomotive shops at Stratford, Ont., another method of cutting the rings is employed, and is illustrated herewith. The ring to be cut is held at an angle by a special clamp, in the lathe tool post, and the ring forced across the carriage ways against a thin milling saw.

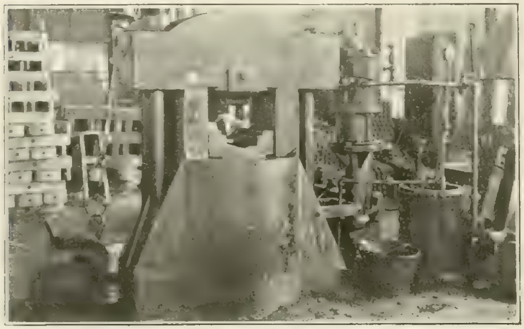
The attachment used in these shops consists of a block of steel, 4 ins. long by 2¼ ins. wide and 2 ins. thick, welded to the outer end of a 10 in. bar of 1 x 1⅝ in. bar, to which it is set at an angle of 45 degs., the angle of the required cross cut in the ring. In the outer face of the block there is a channel 1 x 1 in., into which the ring is slipped, the outside to the front, and held in position by two ½ in. set screws through the lower side. Vertically through the front face there is a 1-16 in. slot, extending in beyond the bottom of the face channel.

The cutting saw is mounted on an arbor between the lathe centres, and the work forced up to it, quickly cutting through the ring. The second cut for the removal of the spring piece is made in the same manner, first moving the ring around the required amount.

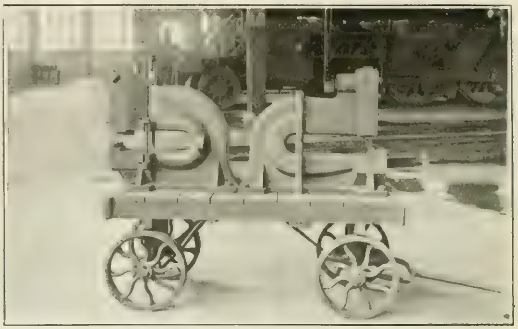
Coupler Stripping Press at Canadian Pacific Railway Winnipeg Shops.

In stripping the wrought iron coupler yoke from the cast coupler, when either one is broken and requires renewing, the usual practice is to cut off one head of each of the uniting rivets, this being done in the time honored sledge and chisel manner. This practice still exists in the majority of shops. In the C.P.R. Winnipeg blacksmith shop this operation is performed in a simple manner in a hydraulic press. This press, with its auxiliary apparatus, is shown in the accompanying illustration. It is a very heavy structure, the lower part consisting of a cylinder casting, with upwardly projecting side arms, on the top of which is attached a head casting, the whole held together by 4 large bolts. The plunger operates upward from the cylinder casting below. The head of the plunger is so formed as to support a united coupler and yoke on the edges of the latter, leaving the central or coupler portion unsupported from below. On the under face of the press head there is mounted a block of the width of the coupler shank, so that, as will be seen from the explanation preceding, the block on the plunger head will fit over the stationary block. The couple and yoke are placed in the press, resting on the yoke edges. The plunger pressure from below is on the yoke edges, while the retarding force from above is on the central coupler shank, the result being that the rivets are seated on both sides on the joining faces. The operation of the press is very quick and effective.

The operating fluid is fuel oil, forced in by an air operated oil pump adjoining, the air end being a locomotive compressor unit, with a small hydraulic pump lower end. The oil reservoir is a partially buried steel tank.



Coupler and Yoke Stripping Press.



Portable Locomotive House Punch and Shears.

The press is provided with an air hoist from above, with handy clamps for lifting the coupler. Different sizes of dies are provided for the various sizes of couplers operated on.

Small Air Drill at Canadian Northern Railway Shops.

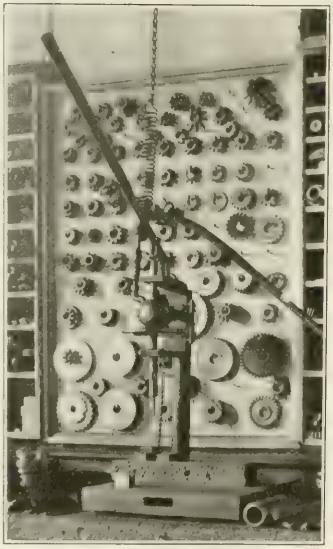
In the tool room of the Canadian Northern Ry. Winnipeg shops, a small portable air drill has been converted into a stationary bench drill, as shown in the accompanying illustration. The air drill is of the earlier type of portable drills, consisting of a single cylinder, with a reciprocating motion, the connecting rod attaching to a crank right on the drill spindle, the motion being kept uniform by a comparatively heavy flywheel.

This motor has been mounted in vertical bearings on a support attached to the side of a surface plate, which is set on the tool room bench. To the top of the vertical stand there is fulcrumed an operating lever, the upper end of the drill spindle connecting thereto. This is attached to a spring from above, normally holding the spindle in its highest position. By the fulcrumed lever the drill can be brought down on the work. While not very powerful, it is useful for a lot of the small drilling found in a tool room.

Portable Punch and Shears in Michigan Central Railroad Windsor Locomotive House.

Locomotive house repairs are quite varied in their character, but are never of such a nature that they cannot be handled with simple tools, as the instant the repairs required assume heavy proportions the locomotive is sent to the back shop—or at least should be. Anything that will simplify the repair work in the locomotive house, and get it back into service with the least delay, is of considerable worth.

In the M.C.R. locomotive house at Windsor, Ont., a useful appliance in the form of a small punch and shear has been added to the equipment, as shown in the accompanying illustration. The two are mounted back to back in their usual relation to each other, on a small truck, on which they can be moved to the work, dispensing with the necessity of bringing the work to the machine. For light work they are very useful, one of the particular fields of usefulness in the locomotive house being that of putting smoke box netting in shape, and the punching and trimming of boiler lagging.



Small Air Motor for Bench Work.

Additional Dominion Legislation.

The following additional acts affecting transportation interests have been passed by the Dominion Parliament:—

Algoma Eastern Ry.—Extending time for construction.

Athabaska Northern Ry.—Extending time for construction.

Calgary, Edmonton and Fort McMurray Ry.—Incorporation.

Canadian Northern Ry.—Extending time for construction of certain lines and authorizing construction of additional branch lines.

Canadian Northern Ry.—Extending time for building certain lines.

Canadian Western Ry.—Extending time for construction.

Caribou, Barkerville and Willow River Ry. Extending time for construction and authorizing building of additional lines.

Dominion North Western Ry.—Incorporation.

Guelph and Goderich Ry.—Extending time for construction.

Huron and Ontario Ry.—Extending time for construction and changing title to Toronto and North Western Ry.

Kettle Valley Ry. Extending time for construction.

Manitou Ontario Ry.—Incorporation.

New Orleans and Grand Isle Traction Light and Power Co.—Changing name to New Orleans and Grand Isle Ry., Light and Power Co.

Niagara, St. Catharines and Toronto Ry. —Extending time for construction.

Pacific and Hudson Bay Ry.—Extending time for construction.

Quebec, Portland and International Short Line Ry.—Incorporation.

Shuswap and Okanagan Ry.—Extending time for construction.

Southern Central Pacific Ry.—Extending time for construction.

Intercolonial Railway Finances

In the House of Commons, Mar. 31, the Minister of Railways said:—"The estimated surplus of the past year's operation of the Intercolonial Ry. is between $900,000 and $1,000,000. It has been a pretty successful year, the revenue being the largest in the history of the road. The estimated revenue is $12,000,000. In comparison with the last three years the results show up remarkably well. The revenue of the last three years was as follows:—1911-12, $10,593,785; 1910-11, $9,863,783; 1909-10, $9,268,234. The following amounts have been taken out during the year and charged to working expenditure:—Rail renewals, $60,000; fire renewals, $60,000; equipment renewals, $300,000. The average price of coal was 12c. a ton higher than in the previous year, and this year the increase will be 25c. a ton. The amount paid in wages for handling the business is about $350,000 in excess of the previous year.

Contracts have been let for rolling stock during the current fiscal year amounting to over $3,000,000. A large quantity of rolling stock has also been ordered at the Moncton shops. With the exception of $1,000,000 which was included in the current estimates, the rolling stock ordered will be paid for out of the revenue of the last two and the current years.

A more elastic paint is required for the finish of steel cars, as the linear expansion of steel is about double that of wood.

The Economics of Railway Location.

The presidential address, read before the Canadian Society of Civil Engineers at its last annual meeting by the retiring President, W. F. Tye, was published in full in Canadian Railway and Marine World for March. Engineering Record, of New York, made the following comments on the address:

"Mr. Tye puts just emphasis on the necessity of balancing the available traffic, the cost of construction and the expense of operating the completed line. The engineer sometimes forgets the real purpose of the railway that of getting business and handling it economically.

"Two parts of the paper are somewhat misleading. Mr. Tye states that the greater the proportion of ruling grade on a division, the lighter the train loads must be. Many elements enter into the determination of the economical train load for a division, and the effect of the profile cannot be dismissed so briefly. Ignoring the time allowable for getting a train over the division, it might be possible to run heavier trains over a division having 60% of ruling grade and well-spaced level places for engines and firemen to rest, than over a division with its 20% of ruling grade concentrated and continuous. In this case there would still be the question as to whether the low speed on the ruling grade would be permissible. If not, the train loads would have to be reduced, and the profile with only 20% of ruling grade, and with the chance of higher speed on the remaining 80%, might have the advantage.

"In stating that the introduction of 100 10 deg. curves in the route of the 18 hour trains from New York to Chicago would add only 80 minutes to the running time, Mr. Tye overlooks the fact that in order to average 49 miles per hour over the entire distance, in spite of stops and slow orders through cities and at other points, this train must go much faster than 49 miles an hour on a large part of the route, and that to get up to such speed usually requires a distance of several miles. With a 10 deg. curve every 10 miles this train could maintain its present necessary speed only for short stretches, and it may be doubted whether it could maintain a schedule of 24 hours for the distance. Adding to this the danger involved in a failure to slow down, it can hardly be considered good practice to introduce sharp curves on high speed lines where they can possibly be avoided. One of the railways running these fast trains is in fact spending large sums to get rid of the few remaining 7 deg. curves.

"Other points, however, brought out by Mr. Tye deserve hearty endorsement. An important end served by the use of trestles instead of embankments, he points out, is the determination of the proper openings for waterways where records are not available. By the time the trestle has to be replaced, sufficient data should be at hand.

"A point made by Mr. Tye that is worthy of much emphasis in the building of a pioneer road which is at all likely to become anything more than an unimportant branch line is the desirability of working from the ideal alignment and profile, and considering the economics of putting in temporary detours and heavy grades that can be rectified individually as desired. Such a line may be more expensive to operate than one built on a uniformly lower standard. The first cost will be less, however, and if there is little business in sight, and hence little to be handled, the increased operating expenses will not be serious when taken in conjunction with the fixed charges. The pioneer railroad builders of the United States could hardly have foreseen the demands that the future would make on their lines. Canada, however, has the benefit of the experience of the U.S., and if she profits by it she will not find it necessary 20 or 40 years hence to rebuild her roads in 100 mile sections, as has been done in the U.S., in order to enable them to handle their business."

Comments by H. K. Wicksteed, B.A.Sc., M. Can. Soc. C.E.

In response to a request, Mr. Wicksteed, Chief Engineer of Surveys, Mackenzie, Mann & Co., Ltd., has favored us with the following comments, which will doubtless be read with much interest:

"I have been much gratified by Mr. Tye's able address before the Canadian Society of Civil Engineers, and, in spite of my having had little spare time, would probably have acceded to your request for comment before had it not been that he had covered the ground so completely and, to my mind, so satisfactorily. The criticism in the Engineering Record is thoughtful, but I am not at all sure that it has made much of a point in connection with the exception it takes to Mr. Tye's statement that 'the greater the proportion of ruling grade on a division the lighter the train loads must be.' I think it will be generally conceded that given a 100 mile division, with a certain amount of rise and fall and a specified ruling grade, it will not ordinarily make much difference whether we use this maximum sparingly or liberally, but the question of endurance comes in as well as that of adhesion; endurance, not only on the part of the fireman, but of the locomotive itself, and I think Mr. Tye is, in the main, quite correct, that even with a fixed maximum there is a distinct gain to be made in reducing the length of that maximum as much as possible. I have always been less timid than most people about introducing curvature into a road and have been much criticized in consequence. It is therefore a keen satisfaction to me to find so high an authority as Mr. Tye willing to go even further than I do.

"I think, however, that in referring to the 18 hour trains between New York and Chicago, he merely wished to take an extreme case as an illustration, and would not in his own practice recommend 10 deg. on a first class road, except under the most severe provocation. But taking his proposition as it stands, it is more than probable in actual practice that many of these 10 deg. curves would be 'bunched' in one locality, and that the one slow down would cover several of them at once, so that the Engineering Record's argument as to the amount of time lost in getting up speed again is much weakened. This practice of 'bunching' sharp curvature is, I think, a thoroughly good one for this reason alone. The first curve being put in to avoid some prohibitively expensive piece of work, we may introduce several more of the same radius on either side of it, for the sake of a comparatively small saving and do little harm thereby.

"Mr. Tye's address was, I think, intended to cover the ordinary conditions obtaining in Canada today, and in nine out of ten of the new roads being built, the question of high speeds is not that which concerns us most, but rather the construction of the cheapest road possible consistent with moderate economy of operation, and that which can with the least expenditure be subsequently developed and improved into one of the highest class. If this principle be accepted we have in [illegible] the strongest argument perhaps that can be advanced for curvature as opposed to steep grades as a means of reducing cost. A rise of 100 ft. with a 1% grade between two long stretches of level, which we wish to take out and improve to 0.5%, means the complete abandonment not merely of the two miles of heavy grade, but of two miles of the level as well, and generally the acquisition of new right of way. The taking out, or flattening, of a few curves on a steep side hill, is generally a trifling matter in comparison, and the existence of the road alongside, actually in operation, is a help in the construction work. I can heartily endorse the policy of studying out and even in some cases laying down on the ground the ideal location and building diversions from it to avoid the present expense of the heavier portions. I can remember a case not long ago where a 50 ft. cut in hard rock was avoided by 5 curves of 10 deg., 'bunched' together, and giving very light work in comparison, and another where a circuit involving 2 miles extra distance was made to avoid a tunnel. The line in each case was so adjusted that there would be the least possible abandonment of work when the final line was put through. Temporary sags in the grade over long fills have of late been much used to the same end, and of course, in this case, there is practically no abandonment of original work, as the alignment remains unchanged. Deep sags, however, with the necessary accompaniment of abrupt changes in grade, are very objectionable things on a busy road, especially if very long trains are handled, and the lifting of the track itself, by successive increments to the fill, is not only, under the same circumstances, very embarrassing and troublesome to the traffic, but dangerous as well. Other things being equal, I prefer a crooked line as a temporary expedient.

"Mr. Tye's point as to the use of temporary trestles is especially interesting, in view of the fact that timber trestles have of late fallen into disfavor. This is, no doubt, largely a reaction from the excessive freedom with which they were used 25 years ago. The C.P.R. was, probably, among the first to revolt against the raising of grades to avoid rock cutting, and to trestle all the resulting fills, whether they contained streams or not. The road was low in first cost, although not pre-eminently so, but the maintenance and renewal charges were high and the danger of fire enormous. In the latter days of the first construction, the grades were lowered until cut and fill nearly balanced in ordinary work, even in rock. When a really heavy fill was met with it was boldly trestled. Under this system, not only were small trestles almost eliminated, but in most cases the rock filling was sufficiently porous to take the transverse drainage, and obviate, for a time at any rate, the necessity for expensive culverts which would have been necessary in the case of earth filling. A point in connection with capital saving expedients introduced liberally on portions of the C.P.R. is the substitution of stream tunnels for masonry culverts. In some cases the opportunities were so great that the location was modified in order to take advantage of them.

"Perhaps the most striking feature of Mr. Tye's address is the limits to which he is prepared to go. Twenty years ago, when a paper of similar tenor was read before the same society, the author was 'jumped on' for proposing 10 deg. as the standard for a development road. He has seen no reason to change his views since, and the criticism, it is only fair to state, came from men who

[illegible]

A Railway Company's Liability for Loss of Baggage

[illegible]

[illegible] that night. It [illegible]

[illegible] tain point and [illegible] given to the wrong [illegible] for [illegible] (Lamont v. Canadian Transfer Co. [illegible]) [illegible] ticket without any such stipulation, has a [illegible]

[illegible] and where the exemption [illegible] relate to [illegible] baggage check that would lead one to think [illegible]

[illegible] baggage room [illegible] baggage room has four doors leading on [illegible] room for safety, that in all modern well [illegible] and interference with the men [illegible] of the railway officials it has been sent on [illegible] I think, supports a finding that there was [illegible] way company in not supplying proper and sufficient accommodation for the men for the doing of their work properly and in [illegible]

Then what is the damage. The total [illegible] amount the trunk, valued [illegible] part of the contents valued at [illegible] the contents of the [illegible] will be judgment then for [illegible]

A Scale Testing Car [illegible] yards, grain elevators, and [illegible]

New Hopper Bottom Box Car on the Grand Trunk Railway.

Something over a year ago, a hopper bottom box car was built to the designs of J. Coleman, Superintendent of Car Department, G.T.R., which has been patented by him in both Canada and the United States. Since the date of its construction, it has been in almost constant service in the grain trade between Midland, Ont., and Portland, Me., trying the car and gathering data with a view to remedying any defects in the construction that may develop while in service conditions.

The body of the car is of the outside steel frame construction, built about a steel centre sill. This type of outside steel frame work car is familiar to all railway men, so needs no further description. It is in the interior construction and addition of special hoppers that the car is unique. The accompanying two illustrations show the outside and interior construction.

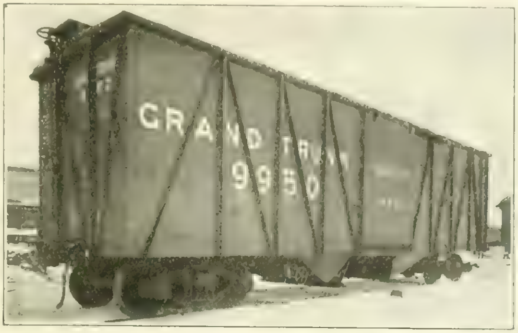
The nearest construction to which the hopper bottoms can be compared, is that of the large steel gondolas for handling coal, and which dump through the bottom through drop doors, the interior construction being such that the coal slides towards the open doors. As the interior view sets forth, the steel centre sill down the length of the car, alters this comparison considerably, making the construction decidedly original.

At the centre of the car are four hoppers, of steel construction, located in pairs, one each side of the centre sill, centrally about the doors, the pairs uniting in a ridge at this point. The slope of the walls of the hoppers is at an angle of about 35 degrees, both walls being the same. The hopper doors all open inward toward the centre of the car, the door portion forming the lower half of the sloping wall of the hopper. These doors are united in adjacent pairs, the lower edges being connected together by a piece of angle the width of the double hopper, the operating mechanism connecting to this cross angle.

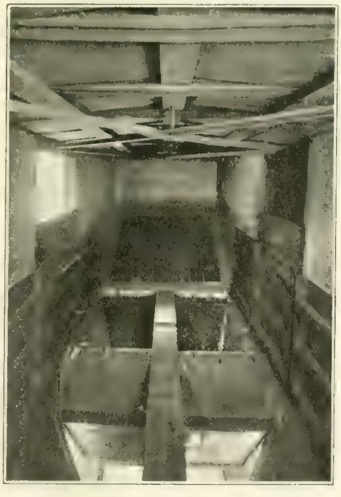
The hinged edge of the door is so constructed that when the door is closed, the meeting edges along the hinge are in close contact, forming a tight, grain proof door. A special feature of the hopper arrangement is the manner in which the doors are sealed so as to be proof against the leakage of the smallest grains. Around the three closing edges of the hopper opening are rivetted two angles, the outer one by the inner face of the angle to the outside of the box, and the inner angle by the outer face to the inner face of the hopper, the two inwardly projecting edges being set apart the thickness of the angle flange, plus a little clearance. The closing edges of the door are also constructed with a double angle. On closing, the webs of the angles on the door and hopper mesh into each other, so that the grain to escape must pass along the face of the angle webs, four times. The fit is such that it would be practically impossible for the grain to follow such a course. In service, this seal has been found most effective.

The closing link for the doors is attached to the cross angle of the latter under the car centre sill, the link running backward, connecting to the rear of the hopper with a pin on a horizontal worm gear, which is secured to the under side of the steel centre sill. This worm gear is operated by a worm on the inner end of the shaft to the left of the near hopper in the outer view of the car. The worm shaft has a hand wheel at the outside of the car, as shown. When closed by the worm gear mechanism, the doors are locked in position on their outer edges by the hook arrangement to be seen on the outer edge of the door.

In the car shown in the illustration, two types of unloading doors have been applied to the hopper. The far hopper has a sliding arrangement of door, operated by the hand wheel shown. This arrangement has not proved as satisfactory as the hopper door arrangement, and will not be introduced in future cars.


Hopper Bottom Grain Car on the Grand Trunk Ry.

The location of the hoppers each side of the centre sill necessitated a rearrangement of the piping and brake rigging under the car. The brake cylinder and reservoir are located between the hoppers under the centre of the car, with the brake rods running back to the trucks between the pairs of the hoppers under the centre sill. The train pipe line comes out around the side of the car.


Interior Arrangement of G.T.R. Grain Car.

The interior arrangement of the car is very different from the standard grain car. From the hopper openings to the end of the car, the floor is sloped at an angle of about 30 degrees, which will chute out all the grain without assistance. This sloped flooring is of sheet metal construction, ribbed lengthwise for strength. These ribways consist of depressions in the sheet about 4 ins. wide and 1 in. deep, in which are fitted oak strips to present a smooth sloping surface.

In order that the car may be employed as an ordinary box car as required, it is provided with three doors on each side which drop down over the hopper openings meeting at the centre over the centre sill. These lowering doors are of ribbed sheet steel construction similar to the end slope. These six doors are all of the same size, which is the width of the side door. The drop doors each side of the side door, fit back into recesses in the car side. The central drop door, swings up as a grain dor for the side door opening. A narrow board is provided for an upper section to the grain door. When these six doors are lowered, the inner surface of the car is level as in a standard box car, save for the sloping ends.

One of the peculiar advantages of the hopper botbottom car is its adaptability to carrying all kinds of bulk loads. For this reason, it is especially well adapted to carrying coal. Throughout the Northwest coal cars are seldom to be seen, nearly all the coal being handled in box cars, these travelling east with a load of grain, and returning westward with coal. The balance of traffic is thus more evenly maintained. The handling of coal is simplified by such a hopper bottom arrangement as this.

A detailed comparison between the carrying capacities and earnings of the G.T.R. hopper bottom grain car and a standard grain car, is given in the following table:—

Particulars.	Hopper Car.	Standard Car.
Carrying capacity, bushels . .	1,833	1,100
Tare, lbs.	48,000	37,000
Load, lbs.	110,000	66,000
Total weight, lbs	158,000	103,000
Ratio, carrying capacity to tare	2.29	1.78
Midland to Portland—		
Distance, miles	697	697
Ton-miles, tare	16,728	12,894
" " load	38,335	23,001
" " total	55,063	35,895
Rate per bushel, cents	5	5
Rate per ton, of grain .	$1.66½	$1.66½
Rate per ton-mile, load, mills	2.39	2.39
Rate per ton-mile, load and tare, mills	1.66	1.53
Earnings on car of grain...	$91.65	$55.00
Portland to Island Pond—		
Earnings on car of coal ...	$54.02	.....
Total earnings on grain and coal	$145.67	$55.00
Cost of carrying car of grain from Midland to Portland at rate of 2 mills per ton-mile of load, although the average for all classes of freight is 4 mills .	$76.67	$46.00
Cost of carrying car of coal from Portland to Island Pond at 3 mills per ton-mile of load, although the average for all classes of freight is 3 mills	$24.67	...
Total cost of carrying grain and coal	$101.34	$46.00
Earnings on 1,200 ton train, including grain and tare, Midland to Bortland ..	$1,388.42	$1,281.36
Earnings on 7 trips, Midland to Montreal, 3 trips Midland to Portland, and 2 trips, Portland to Island Pond	$1,207.84	[illegible]

In the tests of the car from Midland to Portland, experiments along the line of handling coal on part of the return trip have been made as indicated above. The grain was carried from Midland to Port-

[illegible]

Book Reviews

[illegible]

Timiskaming and Northern Ontario Ry. Report for 1911-12.

[illegible] cost of operating, the Commissioners state, [illegible] other railway in Canada; and special rates [illegible]

[illegible]

[illegible] 1911 —

[illegible]

Deductions from income [illegible]

TRAIN MILEAGE.— [illegible] freight trains 396,926; total revenue train [illegible] mileage of empty freight cars north and [illegible]

PASSENGER TRAFFIC.— [illegible]

receipts per passenger per mile, 2.06 cents; passenger service train revenue per mile of road, $2,252.38; passenger service train revenue per train mile, $1.42. Average number of passengers per car mile, 9.10; average number of passengers per train mile, 9.48; average number of passenger cars per train mile, 4.96.

FREIGHT TRAFFIC.—Total freight carried, 562,734 tons; freight originating on road, 326,608 tons; freight received from foreign roads, 236,126 tons; freight carried northbound, 308,777 tons; freight carried southbound, 253,957 tons; tons carried one mile, 69,469,914; tons carried one mile as per mile of road, 234,695; average distance haul of one ton, 123.45 miles; amount received for each ton of freight, $1.65; average amount received per ton mile, 1.33 cents; freight revenue per mile of road, $3,095.75; freight revenue per train mile, $2.10. Average number of freight cars per train mile, 14.50; average number of loaded cars per train mile, 8.97; average number of empty cars per train mile, 4.80; average number of tons of freight per train mile, 156.30; average number of tons of freight per loaded car mile, 17.42.

EQUIPMENT.—Locomotives, 44; passenger cars, 50; box cars, 147; stock cars, 10; vans, 19; flat cars, 469; maintenance of way and structure equipment, 261.

THE PROFIT AND LOSS ACCOUNT showed $316,252.72, brought forward from Oct. 31, 1911; $77,831.57 received from townsites, and $454,201.74 from revenue account, making a total of $848,286.03. From this $510,000 has been paid to the Treasurer of Ontario, leaving a balance carried forward of $338,286.03.

ASSETS

Cost of road	[illegible]
Cost of equipment	[illegible]
Working assets	[illegible]
Deferred debit items	[illegible]
Land Agent	[illegible]
Nipissing Central Ry.	[illegible]
	[illegible]

LIABILITIES

Provincial Loan account	[illegible]
Working Liabilities	170,144.02
Profit and Loss (free surplus)	338,286.03
	[illegible]

Quebec Central Railway Not Under Dominion Control.

Chief Commissioner Drayton, of the Board of Railway Commissioners, has given the following judgment:

Complaints have been made to the Board as to the operation and practices of the Quebec Central Ry. Co., and the question as to whether or not that railway is subject to the Board's jurisdiction, was heard at Ottawa on Mar. 15.

The Quebec Central Ry. is a provincial company incorporated under the statutes of the Province of Quebec. The railway has, however, been acquired by the Canadian Pacific Ry. Co. under lease dated Oct. 2, 1912. This lease seems to give absolute control of the railway and its operations to the C.P.R. Under it, not only the railway now constructed, but also all extensions, branches, and additions that the lessor—that is, the Q.C.R. Co.—may hereafter be authorized to construct by the Dominion Parliament of Canada, by the Quebec Legislature, or by the Board of Railway Commissioners under the provisions of the Railway Act and amendments, with all appurtenances, are leased to the lessee, the C.P.R. Co.—for 999 years.

The lessor's corporate acts are subject to contract with the lessee, the lessor agreeing not to issue any additional capital stock, bonds, or other financial obligations, without the lessee's consent; and at the same time, agreeing to sell all or any part of the existing capital stock within its control, and use its best endeavors to obtain power to create, and thereafter create and issue, additional capital stock, if the lessee so desires. On the same request the lessor must issue bonds or debenture stock to such amount or amounts and at such rate of interest, not exceeding 4 per cent., as the lessee fixes. The lessor is to apply the proceeds of such bonds or debenture stock in such proportions and in such manner towards the construction or permanent improvement of the railway as the lessee may direct; or, at the option of the lessee, the lessor is to pay over the whole or any part of such proceeds to the lessee, in order that the lessee may itself, according to its own discretion, apply the same as aforesaid. The lessee also has the right to exercise all the franchises and powers of the lessor in operating the railway, in building branches under the Railway Act or under any act of the Quebec Legislature, and has the right to use the lessor's name. The officers of the lessor are required, on the demand of the lessee, to append their signatures and affix the lessor's seal to any document useful in the exercise of the lessor's rights and franchises. The lessee, of course, can do what it likes in connection with the running of the trains, may make such rules, regulations, and bylaws touching the railway as it deems advisable, and is to make the tariff of tolls.

The only matters left to the lessor, to warrant its continued corporate existence, seems to be the issue of further stock, bonds, and debentures, and the receipt of rent. The rent takes the form of the payment of interest on the company's bonded or debenture stock indebtedness, and a dividend upon the capital stock of the lessor for the time being issued and outstanding at 4 per cent. for the first four years of the term and afterwards at 5 per cent. It would appear that this collection is in its turn probably a matter of form, in so far as the lessor is concerned, and that the lessee probably, through some official of its own, who may have the added dignity of an official name in the lessor company, will make these payments direct to the shareholders and to the bond and debenture stock holders. On the other hand, it should be pointed out that the lessee covenants to do everything, during the term of the lease, necessary for the preservation of the property and franchises of the lessor, and for keeping alive its incorporation for all the purposes mentioned in its acts of incorporation; and that the lease contains provisions for surrender at the end of the term, and for re-entry for non payment of rent.

The probable reasons for the continuance of the corporate functions of the lessor would seem to be—first, the maintenance of the defined interests of the shareholders in the company, as represented by their stock certificates, unchanged, thus obviating difficulty in determining their interests, and making their compensation easy of adjustment in the form of the dividend secured; secondly, the issue of securities by the lessor for the purposes of the road, enabling the C.P.Ry. to construct new lines under provincial acts, if they are found favorable, and to operate said lines without interference from the Board of Railway Commissioners.

The lease was submitted to the Board for its approval under sec. 361 of the Act; and a consideration of the provisions of [illegible] [illegible] deals with the sale or lease of a company's railway and undertaking by one company to another, either in whole or in part, or for amalgamation. Under the section the agreement must be submitted, to the Board, upon application for its recommendation to the Governor in Council for sanction, the duty of the Board being, in the proper case, to recommend to the Governor in Council the sanctioning of the agreement.

Under sec. 362, companies agreeing to amalgamation are deemed to be amalgamated and to form one company, in the name and upon the terms and conditions which the agreement provides; and the amalgamated company is to possess and be vested with—all the powers, rights, and franchises . . . belonging to, possessed by, or vested in the companies parties to the agreement. The interpretation of "railway" (sec. 2, ss. 21), shows that the word includes any railway which the company has the authority to construct or operate.

Sec. 362, however, has no application. Absolute as is the acquisition by the C. P. R. Co. of the railway in question, there is nothing in the agreement providing one way or the other for amalgamation, a matter necessary for the operation of this section.

Ordinarily speaking, sec. 361 of the Act would have no application, under the decision of the late Chief Commissioner Mabee, on the application of the Montreal St. Ry. Co. for approval of amalgamation agreements with the Montreal Terminal Ry. and the Montreal Park & Island Ry. Companies. In that instance, the local company, the Montreal St. Ry. Co., absorbed two Dominion incorporations,—the Montreal Terminal Ry. and the Montreal Park & Island Ry. Companies. Chief Commissioner Mabee held that sec. 361 deals only with federal companies and not with two provincial companies, nor with a federal and a provincial company; and that, therefore, the section had no application to the sale of a federal railway and its assets and facilities to a provincially incorporated company. This judgment would apply in the present case, if it were not for the act obtained by the C.P.R. Co. (2 Geo. V., chap. 78, s. 14), which provides that, subject to the provisions of secs. 361, 362, and 363 of the Railway Act, the company may, for any of the purposes specified in sec. 361, enter into an agreement with the Quebec Central Ry. Co., and may lease that company's railway and undertaking.

The Board recommended the agreement in question for the sanction of the Governor in Council on Nov. 25, 1912, and that sanction was granted. The Quebec Central Ry. is now operated by the C.P.R. Co. Is it a "railway" within the definition of the Railway Act? Mr. Beatty, Chief Solicitor, C.P.R., claims that its operation by the C.P.R. Co. is not under the provisions of the Railway Act, but under the special act of 1912, claiming that before the C.P.R. Co. could operate a provincial line under a provincial charter, special authority had to be obtained from the Dominion Parliament; and that the railway operated under the section of the interpretation clause already referred to, means a railway subject to the provisions of the Railway Act,—in other words, a railway either incorporated by the Dominion Parliament, or specially declared by that parliament to be a work for the general advantage of Canada.

In the case of the Preston & Berlin St. Ry. Co. v. the Grand Trunk Ry. Co., an application was made by the street railway for an order of the Board permitting it to use a small portion of the G.T.R.Co.'s land for the purposes of its street railway.

[illegible] think it also apparent that the mere act of a Dominion company, such as the purchase of a provincial line, cannot of itself oust provincial jurisdiction. This is not a [illegible] a provincial line under the Railway Act, which may or may not be possible. The Board is not to be understood as determining that under no circumstances can it have jurisdiction over a company as such, enabling it to regulate operation apart from [illegible] industrial branch lines or the enlargement of the track facilities of the railway it[illegible] granted to the Dominion company by a special act of the Dominion Parliament.

[illegible] Dominion company, in so far as its major operations are concerned, should be subject [illegible] Board is concerned, entirely free from con[illegible] line operated, because of certain legal distinction which cannot appeal to the shipper or passenger, or in any way affect the exigencies of traffic. An undivided control in operation is probably more important than construction. Uniformity of railway practice, a most important essential, would [illegible] however incorporated, should, when operated by any of the large Dominion systems, [illegible]

Ninety Per Cent of Rail Failures, [illegible] which constitute 40%. The cause of the [illegible] chemical structure in the ingot. For the [illegible] base, and suggests as a cure better mechanical rolling.

The Pennsylvania Rd. has an oven big [illegible]

[illegible]

Immigration and Colonization in their Relation to the Traffic Departments.

By J. E. Forslund, Western Colonization Agent C.P.R. Immigration Office.

It is a matter of common knowledge that railway construction in Canada, and more particularly in the west, at this period is quite a different matter from what it was [illegible]ties cry for railway facilities, and it is even said that politics are responsible for [illegible] of one railway company to share in the traffic from certain well favored locations. Then western Canada was almost a wilderness, if we are to judge from early reports. It must have seemed a foolhardy venture to plan a railway like the Canadian Pacific, and it was no wonder that men of finance shook their heads and stood aloof. The subsequent history of the construction and completion of this railway is too well known to refer to. Suffice it to say that the C.P.R. has reached the very conspicuous position of being the foremost transportation company in the world, a fact that all Canadians are proud of.

In the building up of this tremendous concern the land department, through its immigration work, has played a conspicuous part, and you will have to bear with a short resume of the same in order to get a full understanding of the relation of the department mentioned to the traffic departments. You will also understand that it will be necessary to deal entirely with the C.P.R., as the writer has spent all his time in this country in this company's service.

When the line was finally completed it connected widely separated communities which had sprung up during the years of construction, but intermediate parts of the wide land were empty. In these empty portions the railway company possessed large land areas which had to be administered and thus necessitated the creation of a land department with a view of selling the land. Looking at this feature now, it seems that it should not have been difficult to sell land, all of which was selected as fit for settlement, and of which a large percentage was really first class farming land. I presume that some of you are not aware of the fact that the C.P.R. at one time tried to dispose of its land grant for $25,000,000 or $1 an acre, without finding a purchaser. One of the chief reasons of slow sales was the vast area of free home[illegible] get them absorbed, because when the even [illegible] the company's, would have to be bought if the newcomer wished to locate in a settled district. Therefore settlers must be brought in, and an immigration department [illegible] products [illegible] employment to the expectant traffic departments, both freight and passenger.

[illegible] settlers, who had located in the Red River valley, moved out into the Dakotas, wherefrom they now, by the way, are returning in great numbers, and here was planted a [illegible] districts which have since become well developed, populous and rich.

[illegible] Germans, French, Scandinavians and Finns, [illegible] they would find suitable conditions for increasing their number, by calling on friends in their old home to come and join them. Of these the two first named did not prosper, the Jew as a rule not being a farmer and the crofter being a fisherman. The other nationalities increased slowly, so that the areas covered by them did not materially extend.

In the meantime another very interesting movement had taken place. A number of German speaking Russians and Austrians living in Winnipeg made application to the Land Commissioner for aid and had been promised assistance in the shape of cattle and implements. Their delegates had selected three townships south of Dunmore, near Medicine Hat, and they were assisted to settle there, the company providing free carriage of all persons, goods and chattels. The settlement did not prosper, however, and two years later they were moved, except four families, one portion to the Edmonton district in Alberta, and one portion to Grenfell, then in the provincial district of Assiniboia, in which districts, after the hard years in the early nineties, they not only prospered but attracted a great number of friends, so that they now form considerable colonies, the members of which are well to do.

The company then turned its attention to western Ontario and took up some 150 families, chiefly from the Parry Sound district, who almost all settled in the Beaver hills, east of Edmonton. They were provided with transportation, the cost of which was paid by notes, which, with very few exceptions were paid off as soon as the settlers got on their feet.

There was never much difficulty in directing people to the open lands, the hard question was to build colonies in the wooded parts and the company undertook to do this by assisting settlers in buying them cattle and implements, the cost of which was to be paid gradually. Lord Mount Stephen applied this principle in starting the Hungarians in Esterhazy and Kaposvar. The company followed suit by placing a number of German speaking families at Balgonie, and a few Scandinavians and Finns north of Whitewood.

Money was also advanced to deserving settlers to enable them to bring out relatives and friends from their former homes and a goodly number of excellent settlers was the result.

While all this was done under the direct supervision of the immigration office, the Mennonites commenced to find their hive too full and prepared to swarm. They applied for facilities to send delegates to spy out suitable locations, and free transportation—this was before the railway commission was called into existence—was granted. Their delegates were sent out and selected the Rosthern district, the success of which is so well known. Again the hive swarmed, this time to Swift Current, where the open level land pleased them. This district, until recently looked upon as a desert or fit only for cattle raising, has, through the move of these people become the centre of a splendid grain district, and Swift Current has for two years enjoyed the distinction of being the greatest wheat shipping centre.

The crop results obtained by the Mennonites and others who had followed them led later arrivals to try their luck further west, through the so called dry belt, with the result that almost all the land is now occupied. Reference was made a moment ago to the attempt to start the German colony at Dunmore. The few families who remained on their locations continued to prosper and they induced a great many friends from Europe and the United States to join them so that gradually a large settlement has been formed in the abandoned and adjoining townships.

In connection with this I will remember the stupendous undertaking commenced by the company, the irrigation works in the from Calgary. Enthusiasts who dreamt of seeing this tract—which offered a traveller a monotonous vista of brown grey desolate prairie—dotted with lakes, thriving towns and happy farm homes, have commenced to obtain realization of their dreams. Although not fully completed the irrigation system has already worked wondrous changes. In order to sell the lands benefited by this noble work, an extensive world wide agency force has been created by J. S. Dennis, the promoter of this undertaking, who is Assistant to the President and head of the Natural Resources Department.

In order to stimulate immigration from the British Isles, the company, in conjunc-who is Assistant to the Vice President and augurated the policy of sending return men, successful western farmers, who spent the winters in their respective old homes, returning in the spring accompanied by new settlers.

The popular Christmas excursions to eastern Canada were really started with the view of getting the people of the older provinces of the Dominion contaminated with the western fever and we all know the great success which attended the same. It later on led to the establishment of similar excursions to the United States.

While all this took place another movement, partly fathered by the company's European Manager, began. The Ruthenian, or the sheepskin clad Galician, started to arrive. They were sent in thousands into the Edmonton district and our Canadian Northern Ry. friends no doubt appreciate their industrious travel and the tonnage arising out of their farming operations. These people, whose town habits are rather boisterous, are industrious farmers, and it is unnecessary to point out their value as laborers, chiefly in construction and maintenance work. They are, however, getting too busy and well to do at home to look for work outside.

The company had in the meantime turned its attention to the possibilities of obtaining settlers from the United States, and in conjunction with the Dominion government an active campaign was started, the results of which have been and continue very gratifying. Great numbers of delegates were transported free of charge into all parts of western Canada—this also before the advent of the railway commission. They came, they saw and were conquered, returning home only to prepare to move to Canada. Seldom, if ever, has bread cast upon the waters returned in such generous measure.

The immigration work had the desired result in disposing of the homesteads within the railway belt, and stimulated the sales of land so that out of 25,000,000 acres now only some 7,000,000 acres remain to be disposed of. Some years ago the company sold some tracts to speculators, or colonization companies as they like to call themselves, but this practice has been discontinued and the company is endeavoring to reach the buyers themselves, men who will start to improve the land. This new policy embraces the ready made farm scheme in which the company's President, Sir Thomas Shaughnessy, takes such a deep interest, and also a loan policy, under which the company will advance desirable settlers about $2,000 to assist them in improving their purchase.

The ready made farms are in groups, which tend to highly develop certain areas and make them specially productive from the traffic man's point of view. As a matter of fact it may safely be said that at present the Natural Resources Department under Mr. Dennis' able management, which department deals with lands, coal, timber, irrigation, mines, cattle industry, encouragement of colonization and subsequent development of towns, is working solely for the benefit of the traffic men. By judicious and elaborate advertising people become interested, decide to go and look over lands and opportunities offered, which all gives the passenger department something to look after. The settlers moving in bring their effects and cattle, and after settlement they need a multitude of things which the freight man has to forward. It is possible that the traffic men do not look upon the low rates which are held out as inducements, with particular pleasure, but the end in this case surely justifies the means.

The best immigration agent is after all the satisfied settler and on the traffic department falls a great share of making him contented, and close attention to his wants will bring this about. The tourist, while he pays handsomely, may never return, while the settler will always be obliged to fall back on the railways for his very existence. The interest of the departments referred to may therefore be said to be interwoven and this fact should find a lodging place in the memories of the coming superintendents, general passenger agents and traffic managers.

The foregoing paper was read before the Western Canada Railway Club recently.

Rates on Shingles from British Columbia to Rochester, N. Y.

The Interstate Commerce Commission (U. S. A.) gave the following decision Mar. 5, in the case of C. C. Follmer & Co., vs. Canadian Pacific Ry. Co., et al.

Complainant is engaged in wholesale lumber business at Grand Rapids, Mich. It alleges that unreasonable charges were collected by defendants for the transportation of a consignment of shingles from Abbotsford, B.C., to Rochester, N.Y., and asks reparation.

Feb. 13, 1908, complainant shipped a carload of shingles weighing 40,800 lbs. from Abbotsford consigned to itself at Menasha, Wis. The shipment moved via C.P.R. and Minneapolis, St. Paul & Sault Ste. Marie Ry., hereinafter called the Soo line. It was loaded in a C.P. 36 ft. car, but before reaching Menasha was reloaded by the Soo line into two smaller cars.. Upon arrival at Menasha, and in accordance with a letter of instructions from the shipper to the agent of the Soo line at that point, the shingles were reconsigned as one shipment to Rochester, N.Y., and were carried forward in the two cars via the Soo line to Manitowoc, Wis., and thence via Pere Marquette Rd. and the New York Central & Hudson River Rd. to destination. From Abbotsford to Manitowoc charges were assessed on the actual weight of the shipment, but from Manitowoc to destination they were assessed on a weight of 27,300 lbs. for the first car and on a minimum weight of 24,000 lbs. for the second car. The total charges amounted to $388.20. Complainant contends that the charges were unreasonable to the extent that they exceeded a through rate of 80c. per 100 lbs. from Abbotsford to Rochester, based on the actual weight of the shipment. There was no joint through rate applicable to the traffic via the route of movement. There were intermediate rates as follows: A joint rate of 70c. from Abbotsford to Menasha, applying also to Maintowoc, and a joint rate of 18½c. from Manitowoc to Rochester. The local rate from Menasha to Manitowoc was 6c. From point of origin to Manitowoc the 70c. group rate was applied, and beyond the latter point a rate of 20c. was charged for which there does not appear to have been tariff authority.

The shipment was received by the Soo line from the C.P.R. as a carload shipment, and for the transfer from one to two cars the Soo line seems to have been wholly responsible. The record affords no justification of that act. It was said that the western carriers declined to allow their equipment to go east of Minneapolis Transfer, but the C.P.R. asserts that it has no such rule and prefers that its cars containing shipments from the west be sent on east. Nor is it shown why the transfer, if necessary at all, might not have been made to a car large enough to have accommodated the entire shipment. This defendant appears to have recognized its mistake and endeavored to make amends for it by reconsigning the shingles from Menasha as one shipment, and by protecting the 70c. rate on the actual weight for the extended haul over its own lines. There was no tariff authority, however, for reconsigning at Menasha on basis of the joint rate to Manitowoc. The through rate legally applicable was 94½c. per 100 lbs., made up of the 70c. rate from point of origin to Menasha and the rates of 6 and 18½c. beyond. Had the shipment continued as a one car movement to final destination the charges at the lawful rate would have amounted to $385.56, or $2.64 less than the amount collected. The lines east of Manitowoc were entitled to charges at their rate of 18½c. per 100 lbs., but they applied a rate of 20c.

We find that the charges collected were excessive and unreasonable to the extent that they exceeded charges that would have accrued at the combination through rate of 94½c. per 100 lbs., based on the actual weight of 40,800 lbs. There was an overcharge for the movement east of Manitowoc of 1½c. per 100 lbs., amounting to $7.70. For the movement up to Manitowoc there was an undercharge of 6c. per 100 lbs., amounting to $24.48, against which should be offset $19.42, the extra charges east of Manitowoc due to the unauthorized transfer of the shipment by the Soo line from one to two cars.

We further find that complainant made the shipment in accordance with the above statement of facts, and paid charges thereon in the amount herein found unreasonable; that complainant has been damaged to the extent of the difference between the amount paid and the amount it would have paid if the lawful rates had been applied on the actual weight of the shipment, and is therefore entitled to an award of reparation against the Pere Marquette Rd. and the New York Central & Hudson River Rd. in the sum of $7.70, with interest from April 9, 1908. An order will be entered accordingly. No order for the future is necessary, as the basis of the claim is in the nature of an overcharge, any recurrence of which should be avoided under existing tariffs.

Aerial Railway at Niagara Falls.—Arrangements are in progress whereby a Spanish company is obtaining a concession to construct an aerial railway across the whirlpool at Niagara Falls, from shore to shore on the Canadian side, forming a cut off over the deep bend in the river. It is to be used for tourist purposes exclusively. A. Balzola, the representative of the company, is in Toronto completing the preliminary negotiations. The company has had similar experience with aerial lines that it operates in Spain.

Intercolonial Railway Terminals at Halifax.

In presenting the estimates to the House of Commons, recently, the Premier, discussing the proposal for the new and enlarged terminals at Halifax for the I.R.C., said the matter had been under discussion for a long time and had been considered by several engineers, including F. P. Gutelius, formerly Assistant Chief Engineer of the C.P.R., and F. H. Cowie, Chief Engineer of the Montreal Harbor Commission. The general conclusions of the tDepartmen [illegible]

The proposed terminal will consist of a bulkhead pier or seawall about 2,000 ft. long at which three of the largest ocean vessels can dock in safety without tug assistance; a wharf building the whole length of the bulkhead pier; the first floor of which will be for freight and the second floor for passengers and immigration quarters, and a union passenger station of suitable architectural design and of capacity for the increased business which is expected to come with the necessary tracks and facilities usual at terminal stations of this character. This scheme of development provides for the construction of six freight piers 300 ft. wide and 1,250 ft. long which will be equipped with necessary wharf freight sheds and railway tracks; the necessary yards for the storage and shunting of cars; the construction of an elevator which will permit of grain being loaded into ships at each of the 32 berths; a locomotive house for the care of passenger locomotives and switch engines, and a breakwater from Point Pleasant Park to the Reid rock buoy.

It will be reached by a double track railway about five miles long which will leave the main line at Three Mile House, pass through the low divide between Bedford Basin and the Northwest Arm, skirt the Northwest Arm and reach the new terminals through a deep cutting under the lower end of Young Avenue.

It is proposed that the first unit will consist of a bulkhead pier, the freight and [illegible] passenger station, steamship and one freight pier equipped with sheds and tracks together with the necessary accessories, which will provide accommodation for eight of the largest ocean steamships. As soon as business warrants it, two more piers will be constructed, giving an additional capacity for eight such steamships; and in five or six years, or sooner if necessary, upon the opening of the Quebec bridge, provision will be made for a further accommodation of eight such steamships. As [illegible] the demands of trade necessitate, the two southerly piers will be constructed, thus completing the scheme.

The Government having approved of this general plan, ordered the engineers to proceed with the preparation of detail plans which are not yet complete. It also purchased such properties as could be procured cheaply and is now committed to an expenditure on this account of between $400,000 and $500,000. It is proposed to proceed with the purchase of the remaining right of way and water frontage the plans for which were filed recently.

[illegible]

It is proposed during the coming season to proceed with the construction of the quay walls and of the railway and with the rock and earth filling, the construction of the necessary overhead bridges and such other works as may be found economically convenient in connection therewith, for all of which it is estimated $2,500,000 will be required during the approaching fiscal year. These proposals the Government is proceeding to carry out, with the sanction of Parliament, in the hope that they will provide the accommodation required by the increasing trade of the port.

Birthdays of Transportation Men in June.

Many happy returns of the day to:

[illegible] Manager, Sandwich, Windsor and Amherstburg Ry., Windsor, Ont., born at Ayr, Ont., June 20, 1851.

W. C. Bowles, General Freight Agent, Western Lines, C.P.R., Winnipeg, born at Montreal, June 3, 1875.

J. H. Boyle, Superintendent, District 3, Lake Superior Division, C.P.R., Schreiber, Ont. born at Waterloo, Que., June 26, 1869.

F. P. Brady, Member, Government Railways Managing Board, and General Superintendent, Government Railways, Moncton, N.B., born at Haverhill, N.H., June 22, 1853.

H. W. Brodie, General Passenger Agent, Lines West of Revelstoke, C.P.R., Vancouver, B.C., born at Fredericton, N.B., June 8, 1874.

A. H. N. Bruce, M. Can. Soc. C.E., Chief Engineer, Quebec and Saguenay Ry., Quebec Ry., Light, Heat and Power Co., etc., Quebec, Que., born at Ballyscullion, Ireland, June 18, 1854.

T. Davies, Chief Dispatcher, Canadian Northern Ry., Port Arthur, Ont., born at Bangor, Wales, June 17, 1878

A. E. Doucet, M. Can. Soc. C.E., District Engineer, National Transcontinental Ry., Quebec, born at Montreal, June 9, 1860.

E. W. DuVal, Superintendent, District 3, Saskatchewan Division, C.P.R., Saskatoon, born at Toledo, Ohio, June 5, 1885.

G. H. Eaton, Assistant Master Car Builder, Western Lines, C.P.R., Winnipeg, born in Staffordshire, Eng., June 9, 1860.

J. M. R. Fairbairn, M. Can. Soc. C.E., Assistant Chief Engineer, Eastern Lines, C.P.R., Montreal, born at Peterboro, Ont., June 30, [illegible]

A. A. Goodchild, Auditor of Stores and Mechanical Accounts, C.P.R., Montreal, born at [illegible] London, Eng., June 3, 1866.

J. A. Heaman, Assistant Chief Engineer, G.T. Pacific Ry., Winnipeg, born at Memphis, Tenn., June 3, 1874.

H. W. [illegible], Local Secretary, Canadian Northern Ry., London, Eng., born there June 6, 1869.

Hon. J. D. Hazen, M.P., Minister of Marine, Ottawa, born at Oromocto, N.B., June [illegible]

L. R. Johnson, General Superintendent, Angus Shops District, C.P.R., Montreal, born at Abingdon, Berks., Eng., June 22, 1855.

L. K. Jones, I.S.O., Assistant Deputy Minister and Secretary, Department of Railways and Canals, Ottawa, born at Port Hope, Ont., June 9, 1849.

A. C. Lytle, Assistant Superintendent of Construction, Montreal Tramways Co., Montreal, born at [illegible]

R. S. McCormick, M. Am. Soc. C.E., Chief Engineer, Algoma Central and Hudson Bay Ry. and Algoma Eastern Ry., Sault Ste. Marie, Ont., born at Quaker City, Ohio, June 22, 1873.

D. McDonald, General Manager, Montreal Tramways Co., born at St. Thomas, [illegible] June 17, [illegible]

S. J. McLean, Dominion Railway Commissioner, Ottawa, born at Quebec, June 14, 1871.

J. V. McNab, Resident Engineer, C.P.R., Saskatoon, Sask., born at Ayr, Ont., June 11, 1884.

C. E. McPherson, Assistant Passenger Traffic Manager, Western Lines, C.P.R., Winnipeg, born at Chatham, Ont., June 7, 1861.

W. R. MacInnes, Freight Traffic Manager, C.P.R., Montreal, born at Hamilton, Ont., June 7, 1867.

H. [illegible] Maguire, District Baggage Agent, Pacific Division and B.C. and Pacific Coast Service, C.P.R., Vancouver, B.C., born at Toronto, June 16, 1881.

G. Manson, Assistant to Vice President C.P.R., Winnipeg, born at Thurso, Scotland, June 8, 1863.

J. D. Morton, Assistant Comptroller, Canadian Northern Ry., Toronto, born at London, Ont., June 15, 1857.

L. Mulkern, District Freight Agent, C.P.R., London, Ont., born there, June 18, 1871.

H. A. Pepler, District Master Mechanic, C.P.R., Farnham, Que., born at Richmond, Que., June 25, 1873.

J. E. Pinault, Superintendent, Canada and Gulf Terminal Ry., St. Flavie, Que., born at Rimouski, Que., June 24, 1884.

M. J. Power, General Storekeeper, Angus Shops, C.P.R., Montreal, born there, June 19, 1877.

F. Price, Superintendent Passenger Service, G.T.R., Montreal, born there, June 11, 1864.

Allan Purvis, Manager Interurban Lines, British Columbia Electric Ry., New Westminster, B.C., born at Batavia, Java, June 29, 1864.

A. T. Tomlinson, M. Can. Soc. C.E., Chief Engineer, North Ry., Montreal, born at Grand Falls, N.B., June 22, 1869.

W. Webber, General Agent, Passenger Department, Atlantic Steamship Service, C.P.R., Montreal, born at Liverpool, Eng., June 10, 1872.

Walter White, Trainmaster, G.T.R., Palmerston, Ont., born at Toronto, June 4, 1866.

Tie Preservation Experiments.—The U.S. Forest Service, in conjunction with various railways, has been conducting experiments on ties on eight test tracks. On the oldest of these, on the Santa Fe in Texas, 5,547 ties of 13 kinds of wood were laid in 1902 to determine the relative durability of the several kinds of wood, and the efficiency of some eight preservative processes. From this test the conclusions are drawn: 1st, that zinc chloride is an effective preservative for ties subjected to the severe conditions under which they were laid; 2nd, that a fairly heavy impregnation of zinc chloride is advantageous; 3rd, that a light injection of creosote apparently adds to the effectiveness of zinc chloride treatments; 4th, that treatments with preservatives will not yield good results unless the ties are sound in the first place, and the treating properly done; 5th, that the great variation in durability of the different species in nearly all of the treatments indicates that some of the species were not properly treated; and 6th, that species which, when untreated, decay most rapidly, appear to give the greatest relative increase in service when treated.

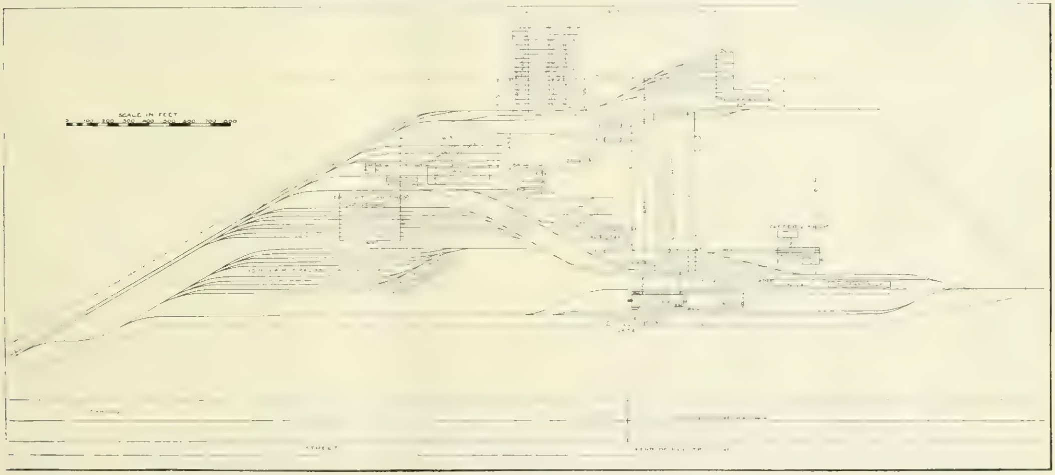
It is announced that the C.P.R. has decided to increase the wages of locomotive drivers on lines east of Port Arthur by 10% from January last and by 5% for those employed on lines between Cartier and Fort William. An increase of 10% on the then existing schedule was made in Aug. 1910.

Since the relocation of the Panama Rd., surveys are in progress for its operation by electricity. It is proposed to transmit from the hydro electric plant at Gatun for this purpose and for lighting the canal and operating the various machine shops.

The Canadian Pacific Railway's Ogden Shops.

The C.P.R. has recently put in operation near Calgary, Alta., a large shop plant of more than ordinary interest by reason of its size, its complete and modern character, and the speed with which it was created. The shop location is at Ogden (named after the company's Vice President, I. G. Ogden), 4.6 miles east of Calgary and 2,246.7 miles from Montreal. A preliminary description of the plant appeared in Canadian Railway and Marine World for Feb., 1912.

Its distance from those sections of the country where the greater part of the construction materials, machinery and equipment were produced, constituted the first and one of the most important problems. A second important problem arose on account of the construction season being extremely short, owing to the high latitude, frost remaining in the ground until about April 1, and returning with snow as early as Oct. 1. A third very important problem was the comparative scarcity of labor in the Canadian Northwest, this condition being greatly aggravated during the late summer months when harvesting begins and all labor markets are practically drained of men. Plans had, therefore, to be drawn, materials ordered, deliveries made and complete field organization perfected so that the shops could be closed in between April 1 and Dec. 1, and sufficiently heated so that inside work could be continued after cold weather had set in. How this was done will be seen by the progress diagram on page 267.



General Location Plan, C.P.R. Ogden Shops.

The shops consist in general of main locomotive shop (including erecting, machine, blacksmith and boiler shops); tender and wheel shop; pattern shop and pattern storage; foundry; storehouse and office building; material platforms and scrap dock; oil house; coach repair and paint shop; freight car repair shop; planing mill; boiler and compressor house; 1,260 ft. yard crane; miscellaneous structures, including transfer table and pit for coach shop, mess hall, driven wells and water tower, all service system, such as drainage, sewage, fire protection, water supply, etc.

THE MAIN LOCOMOTIVE SHOP is designed to contain the erecting shop, machine shop, blacksmith shop, and boiler shop.

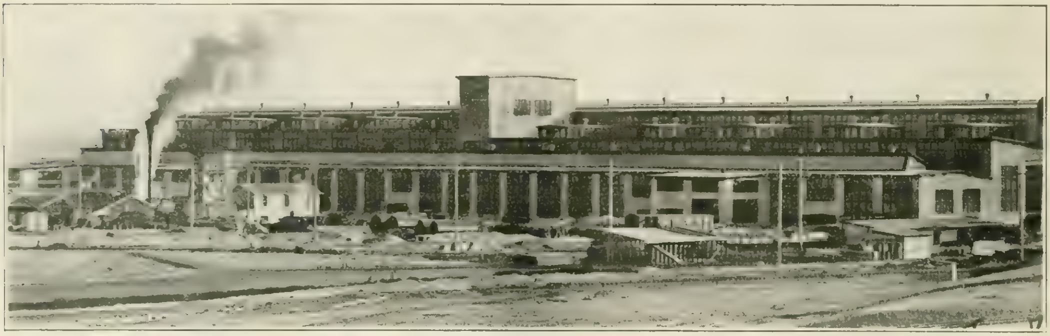
The erecting shop is of the transverse lift over type, contains 35 bays, each 22 ft. between centres, and is 778 by 75 ft. The entire area is served by two travelling electric cranes, carried on two levels. A 120 ton crane, furnished with two 60 ton trolleys, is carried on the upper level, and is used for transferring, wheeling and unwheeling locomotives and handling parts. One of the trolleys on this crane is equipped with a 10 ton auxiliary hoist for handling light material at a high hoisting speed. Another 10 ton travelling electric crane operates at high speed and serves the entire area of the erecting shop, for handling material in that shop and transferring same to the blacksmith shop and machine shop. The machine shop and the boiler shop are located in adjacent bays on either side of the erecting shop.

Provision is made on the crane columns in the erecting shop for attaching portable jib cranes for use in dismantling and erecting material on the front ends of locomotives. These cranes are placed where desired by means of the overhead travelling electric cranes. Entrance for locomotives to the erecting shop is provided through four doors, located in the west side of the shop, two of these doors being located at either end. For providing additional means for entrance of locomotives, six door openings are provided in the east wall of the machine shop, two of these being at the north end and four at the south end. All of these entrance tracks are connected up with the erecting pits of the several stalls where they enter the building, to permit of the locomotives moving into and out of the shop through these entrances should this movement become desirable or necessary.

The machine shop to contain heavy machine tools is located parallel with and adjoining the erecting shop on one side, and is 60¾ ft. wide, and the same length as the erecting shop.' A high speed travelling crane of 10 ton capacity covers the entire area of this shop. Material can be brought into the shop through a door provided in the end of the building, the material being brought up to the end of the machine shop by the travelling electric yard crane which travels across the end and outside of the locomotive shop. Space for the lighter machine tools is provided in a shop 60¾ ft. wide parallel with and alongside of the heavy machine shop and of the same length as that shop. An overhead trolley beam is provided on the bottom board of the roof truss to permit of using a travelling electric trolley for handling material longitudinally in this shop. Provision has been made for a foreman's office elevated above the floor and having liberal glass surface in the walls so as to give the best possible view of the shop.

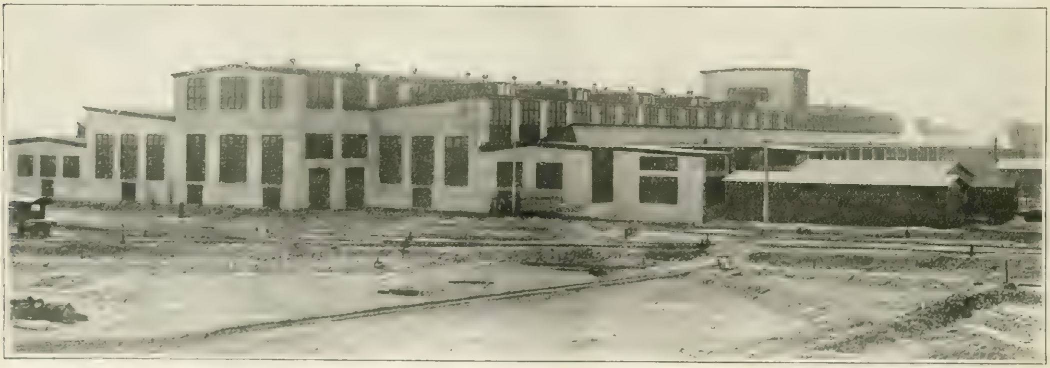
The blacksmith shop is located alongside of and parallel with the erecting shop on the opposite side from the machine shop. This building consists of two bays each 332 ft. long, 60¾ and 50 ft. wide, respectively. Space is provided for heavy forging work, steam hammers, etc., in the building immediately adjoining the erecting shop. The blacksmith shop will not be served by a travelling crane, but provision has been made for jib cranes to handle the material from steam hammers, forgings, etc. In a building of lower cross section alongside are located the furnaces, bolt headers and other blacksmith shop machinery. This portion of the shop is served by a trolley its full length, to facilitate the longitudinal movement of material through the shop.

The space for the boiler shop is provided in a two bay building, alongside of and parallel with the erecting shop at the end of the blacksmith shop, 352 ft. long and the same width as the latter shop. The part of the boiler shop immediately adjoining the erecting shop is provided with a 40 ton travelling electric crane, equipped with two 20 ton trolleys, serving the entire area of the boiler shop, for handling the boilers and other material. The riveting tower is located between two of the roof trusses in the end of the boiler shop, with a 25 ton crane for serving the hydraulic riveter. In the outer of the two bays of the boiler shop, space is provided for a flue shop and boiler shop tools. The entire length of this space is served by a 3 ton overhead travelling trolley for handling material through the shop. Space for a flue rattler is pro-which immediately outside of and adjacent to the low bay of the boiler shop. An entrance track is provided through the outside wall of the boiler shop, on which boilers or other equipment going to this department can be delivered on cars under the travelling crane, for unloading, or may be loaded out for shipment in the same way. This facilitates the handling of boilers from steam shovels, pile drivers, lidgerwoods, etc. Jib cranes are provided for serving the individual machines in the boiler shop where such service may be necessary.



Locomotive, Erecting and Machine Shop, Showing Blacksmith and Boiler Shop Bays, Viewed from the West.

The heating throughout is done by indirect fan system. For distributing the heated air, underground concrete and tile ducts are used. The general illumination consists of Cooper-Hewitt lamps, with circuit and plug boxes for extension loop cords. Provision has also been made for incandescent lighting circuits for individual lighting at machine tools where required, and for outlet boxes for connecting extension lamp cords to provide lighting for the interior of the locomotive boilers on the erecting floor. Toilets, lavatories, and metal lockers are provided in the various departments of this shop. A suitable system of piping is provided for distributing live steam, compressed air, fuel oil and water for fire protection, drinking and hydraulic pressure. Outlets for compressed air are provided in duplicate in the sides of each of the engine pits to supply compressed air for operating pneumatic tools.



Locomotive Erecting and Machine Shop, Showing Roof Arrangement, with Special Reference to Lighting, Viewed from the Northwest.

In the main locomotive shop the electrical feeders from the power company transmission lines are carried in underground ducts, bringing the current at the voltage delivered by the power company, viz., 2,200 volts, to a sub station located adjacent to and immediately outside of the low machine bay, the transformers for stepping down to 440 volts being located in the sub station in which are also two motor generator sets for supplying direct current. The switchboard is also located in this sub station for controlling the power and lighting circuits in the machine shop, and for the tender shop and foundry. As far as possible distributing feeders are carried in conduit beneath the shop floor, thereby minimizing the amount of exposed wiring in the shops.

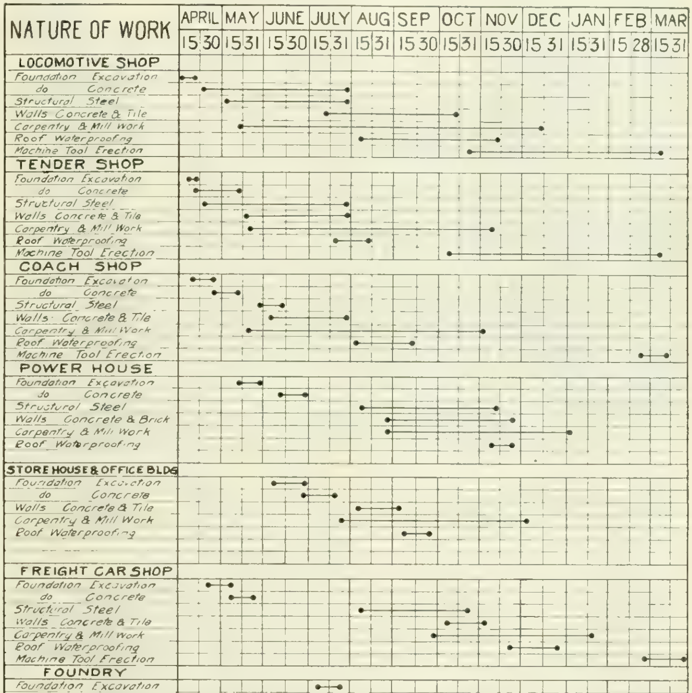
The building containing all of the above departments of the locomotive shop is constructed with structural steel frame carried on concrete foundations. The exterior walls up to the window sill line are of concrete, above the window sills of hollow tile plastered. Ample window area is provided in the side walls and in roof monitors and skylights, so as to give sufficient natural lighting. Good ventilation is obtained through ventilators in the monitors and skylights, and by the use of swinging sash in the vertical walls. With the exception of the blacksmith shop and a portion of the boiler shop the floor throughout is constructed with a 1½ in. asphalt mastic wearing surface which is underlaid with a rough concrete slab about 6 ins. thick. In the blacksmith shop and a portion of the boiler shop the floor is of cinders. The roof sheathing is constructed of 2 x 4's, surfaced on one side and one edge, and spiked together on edge, thus affording good fire resistance qualities and materially reducing the heat losses. The roof water proofing is four ply tarred felt, pitch and gravel, with copper flashing. Suitable drain leaders are provided and connected into underground tiled drains to carry off the water from the roof. The large skylight on the erecting shop bay is of steel bars lead covered with ribbed wired glass.

THE TENDER AND WHEEL SHOP is constructed with structural steel frame and with steel roof trusses, otherwise the general construction of the building is similar to that described for the main locomotive shop. It is an L shaped structure 263 by 80 ft., with L 180 by 80 ft., and affords space for making repairs to locomotive tenders, steam shovels and maintenance of way equipment. The portion of the shop intended to receive the equipment to be repaired is spanned over its entire area by a 20 ton high speed travelling electric crane equipped with two 10 ton trolleys. Longitudinal tracks on 20 foot centres extend to the doors in the building wall. A car puller is installed for moving the equipment into and out of the shop. A sufficient number of tracks extend through the rear wall of the building to facilitate the movement of material into the shop. In the L portion of the building, of lower cross section, space is provided for steel tire wheel lathes, wheel and axle machinery and such other tools as are required. A depressed track carried along the ends of the wheel storage tracks outside facilitates unloading and loading of wheels and axles. The heating, lighting, and service equipment is similar to that described for the main locomotive shop.

PATTERN SHOP AND PATTERN Storage.—Space for the pattern shop and pattern storage is provided in a separate building located adjacent to the foundry, a fire wall separating the pattern shop from the pattern storage. The general construction of the building is the same as that of the other buildings—the roof of slow burning mill construction. The structure is 162 by 31 ft. wide, is heated by the direct system and lighted with keyless socket marine type incandescent lamps. A sprinkler system is provided for fire protection.

THE GREY IRON FOUNDRY building is 203 by 80 ft. wide, constructed with two bays. The frame is of structural steel carried on concrete footings. The general construction is the same as that described for the other buildings, except that the floor is of the usual clay type used in foundries and the roof over the cupola room is of corrugated asbestos. The bay of higher cross section is served over its entire length by a 10 ton high speed travelling electric crane. Jib cranes, attached to building columns, are provided. These cranes are so arranged that they may be removed from one location to another if desired, being handled by the travelling electric crane. In the side bay of lower cross section, space is provided for core making and shop moulding floor. The charging floor for the cupola is located in the centre of the lower bay. Heating is by the indirect fan system, with underground tile and concrete hot air ducts. For general illumination, flaming arcs are used in the high bay and ordinary arcs in the low bay, with outlet boxes for extension lamp cords. Toilets, lavatories, and conveniences for the men are provided; also steam, air and water service, for fire protection and drinking purposes. The location of this building alongside of and parallel with the travelling electric yard crane enables the unloading of scrap and pig iron to be taken care of by the yard crane. This close proximity of the foundry to the yard crane also reduces to a minimum the handling of the castings from the foundry to storage, to the main shop, or in loading for shipment.

STOREHOUSE AND OFFICE BUILDing.—This building is 252½ by 60 ft. One end of the building for a length of 40 ft. is carried up three stories, and contains offices on the second and third floors and a fire proof vault. The remainder of the building, for storehouse purposes, is two stories high and contains electric elevator, platform scales, material bins and shelving. The walls are of hollow tile blocks on concrete foundations. The framing is of heavy timbers, with roof sheathing of 2 by 4's surfaced on one side and one edge, and spiked together on edge. The foundations are carried up to bring the floor of the storeroom to car door height. The necessary toilet and lavatory facilities are provided. The offices are heated by direct radiation, the remainder of the building being heated by the indirect system. The lighting is by incandescent lamps. Fire protection is by automatic sprinklers. The ground floor of the storehouse has a 1½ in. asphalt mastic wearing surface. The other floors throughout the building are of wood. The window arrangement is such as to best accommodate the material bins and shelves without interference with good lighting. The storehouse is located parallel with the main locomotive shop. The space between these two buildings is spanned by a high speed travelling crane which can be utilized to handle all heavy material to and from the cars from the storage space that is provided between the storehouse and the erecting shop. The use of this crane practically eliminates manual handling of heavy material, and permits of handling numerous small parts in quantities when contained in suitable receptacles.

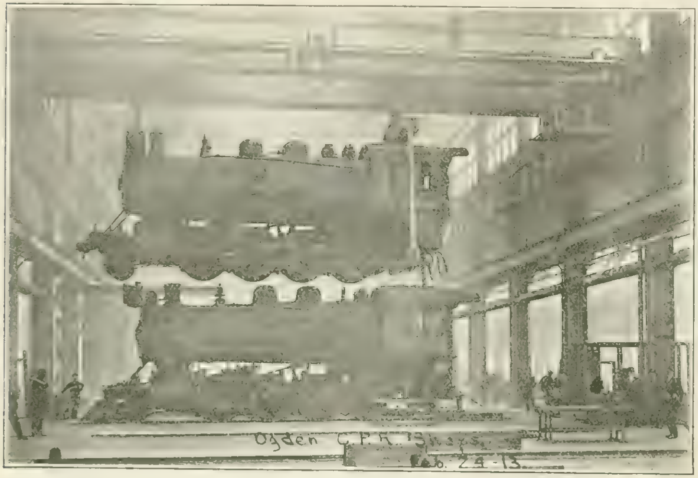


Progress Diagram for the Different Units of the Plant.

MATERIAL PLATFORMS AND SCRAP Docks.—A material platform 90 by 350 ft. abuts one end of the storehouse. This platform is also carried along either side of the storehouse, where it is 15 ft. wide. It is constructed of concrete retaining walls filled in with earth and a top dressing of cinders covers the fill except alongside of storehouse, where plank covering is laid. The platform extends to and along the sides of the oil house.

OIL HOUSE.—For storing and distributing oil a separate building is provided convenient to, but located far enough away from the storehouse and other buildings, to eliminate the fire risk. It is constructed with tile walls (plastered on the exterior) on concrete foundations, with a concrete basement at one end, for the tanks which contain the oil for local distribution. The roof is of reinforced concrete slab, as is also the floor of the pump room over the basement. The part of the building used for storing oil in barrels has a cinder floor. The pump room is partitioned off with a brick wall carried up to make a fire wall. Ten oil tanks with measuring pumps are installed and provision is made for conveniently emptying the oil from barrels into the tanks in the basement. The oil house basement is heated by the direct system to the high temperature necessary to render the oil fluid during extreme cold weather; the direct system being also used to heat the rest of the building. The lighting of the building is with keyless socket marine type incandescent lamps. Fire protection, including sprinklers, is installed.

COACH REPAIR AND PAINT SHOP.—The building containing these departments is 362 by 146 ft., having 15 tracks on 24 ft. centres. It is constructed with hollow building tile carried on concrete foundation. Heavy timber posts support the roof, which is of slow burning mill construction. Otherwise, the construction is the same as that described for the main shop building. Space is provided along one si[illegible] building for varnish room upholstering, office, sub store, paint storage, heating plant and air brake repairs. When necessity arises for increased shop capacity in this department it is proposed to obtain such increase by the erection of another shop on the opposite side of the transfer table. Heating is by the indirect fan system, with underground concrete and tile ducts. Lighting is by incandescent lamps. Compressed air, steam and water service, including fire protection and automatic sprinklers are provided. Toilets, lavatories, and conveniences for the men are also supplied in this shop.



Interior of Locomotive Shops, Showing 120 Ton Locomotive Crane.

THE FREIGHT CAR REPAIR SHOP is 231 by 303 ft. and contains eight repair tracks, spaced in pairs, with industrial track between each pair of repair tracks. A tile wall partitions off the shop, 50 ft. wide along one side, which will contain the blacksmith forges, tools, heating plant, foreman's office, toilets, and lavatories. The building is of structural steel frame with tile walls, plastered on the outside, with saw-tooth roof construction. The general construction of the building otherwise is the same as that of the other shop buildings. An overhead trolley beam is provided to permit of handling timbers with a trolley into the shop. Compressed air, steam and water service piping, and fire protection, including automatic sprinklers are supplied. Heating is with the indirect fan system, with underground concrete and tile ducts. Lighting is by 100 watt tungsten lamps. The location of this building alongside of the lumber yard permits of handling lumber so that it can be passed through into the shop without rehandling.

Passenger Car Repair Shops, C.P.R. Ogden Shops.

THE PLANING MILL is 303 by 80 ft. and contains the wood working machinery. The frame is of structural steel carried on concrete footings. The general construction of the building is the same as that of other shop buildings. A track extends through the building longitudinally, to permit of movement of material in at one end to the various machines and out through the opposite end with the minimum amount of handling. The building is located so as to be convenient to the passenger car shop and the freight car shop. The lumber yard is located back of and at one end of the planing mill. Suitable piping has been provided for distributing compressed air and water. The fire protection system includes automatic sprinklers. Provision is made for toilets, lavatories, and metal lockers for the men employed in this department. Heating is by the indirect fan system with galvanized iron heating ducts. Lighting is by mercury vapor lamps.

THE BOILER HOUSE contains sufficient space for 2100 h.p. water tube boilers, to provide steam for heating the shops and for other purposes for which steam is required throughout the shops. The building is constructed with brick walls, carried on concrete foundations, with steel roof trusses and supports for coal bunkers. The chimney is of reinforced concrete, 200 ft. high, with a minimum diameter of 9 ft. The overhead coal bunker for each boiler is divided by a reinforced concrete partition into two compartments to provide for storing and burning two kinds of coal. An overhead storage bin for ashes is provided, from which bin the cinders can be discharged by gravity into cars alongside of the building. A concrete dumping hopper is provided outside for dumping coal from cars. A pivot steel elevator raises and discharges the coal into the overhead bunker. A skip bucket, with electric hoist handles the ashes into the ash bin. The boiler units are 350 h.p. rating and are set in three batteries of two each. Five of the boilers are equipped with chain gratestokers. The sixth boiler has the shaking grates to burn shavings and other planing mill refuse. Space is also provided for three electrically driven air compressors each of a capacity of 1500 cu. ft. of free air per minute. Only two of these compressors are so far installed. Transformers and distributing panel are located in this building for transforming and distributing light and power current to the shop yard, freight car shop, planing mill, and coach repair shop. There is no direct current apparatus in this station. Provision has been made for two incoming 2200 volt lines, one of 2000 k.w. and the second of 1000 k.w. capacity for breakdown service. The steam required for the steam hammers and other shop purposes during the summer can be supplied by one boiler. The boiler capacity provided will afford one spare boiler during the extreme weather conditions when the maximum steam demand occurs.

A YARD CRANE runway, 1260 ft. long, extends from the west line of the locomotive shop and carries a 10 ton high speed traveling electric crane with 80 ft. span, serving the material yard and a portion of the storehouse platform and scrap dock. One of the storehouse tracks extends through under this crane, resulting in giving ample space for the storage of material alongside of the storehouse, foundry and locomotive shop. By this arrangement heavy material can be unloaded, stored, and rehandled to the shop or loaded out again by the crane for shipment, practically eliminating manual labor in the handling of all heavy material.

MISCELLANEOUS STRUCTURES.—The

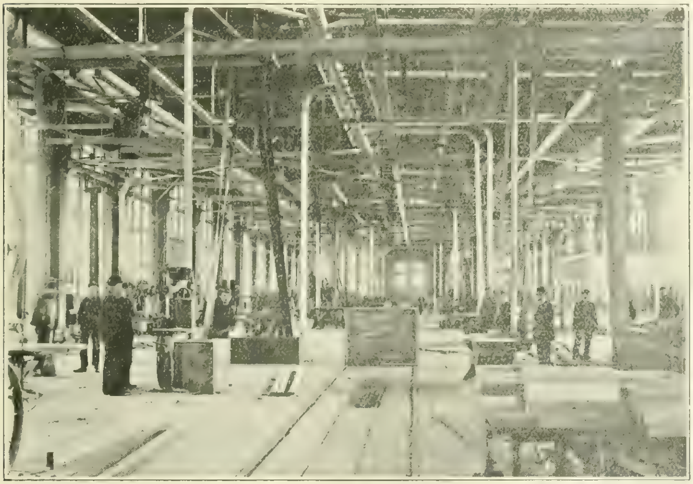
transfer table for serving the coach shop is 75 ft. long, of 150 tons capacity, equipped with electric motor, with concrete transfer table pit 400 ft. long, extending out far enough at either end of the building, for providing entrance and egress at both ends.

The mess building is 269½ ft. by 31 ft. 10 ins., of wooden frame construction, covered outside with sheathing, building paper and siding and sealed on the inside with metal sheathing. It has a concrete floor, and contains a dining room and lunch room for the workmen, and a dining room for the officials, together with kitchen and pantry. Sixty feet of the length of the building is carried up two stories to provide an apprentice schoolroom and quarters for the help. Heating is by the direct system and lighting with incandescent lamps.

There are also two small buildings located near the freight repair tracks for blacksmith shops and workmen tools, and in one of them is a small toilet and office. Dry kiln, material bins, plate and iron racks, coal and coke sheds, are also provided.

For obtaining water for shop purposes there have been put down two 8 in. wells equipped with electrically operated pumps. To supplement this supply and to provide a main source of supply for fire protection the City of Calgary has laid into the shop site, to a point midway the length of the main shop building on the west side, a 10 in. cast iron water main. The shop service and fire lines are connected on to this main and into a steel tank of 125,000 galls. capacity, which is erected on a 70-ft. steel tower, principally for use in connection with automatic sprinklers in the various buildings where these are installed. A complete fire protection system has been put in, with hydrants distributed about the shop yard.

The sewage system in the shop yard may be divided into the sanitary and storm sewers. The City of Calgary is furnishing the main sanitary sewer, beginning at the east line of the freight car shop and extending to the eastern boundary of the shop property. All the sanitary sewage lines from the various buildings are connected into this sewer. Storm sewers are provided, where necessary to carry off the roof water from the buildings where the roof construction is such that this cannot be discharged on to the ground.



Interior of Planing Mill.

The location of the shops is practically on the open prairie and on the beginning of construction arrangements had to be made to house and board on the shop property a considerable quantity of labor. To this end, frame bunk houses were built, with two tiers of bunks on each side of the building, eight bunks long, each house having a capacity of 32 men. Stoves were placed in the centre aisle, and benches along the sides of the lower tier of bunks. On the coming of summer, and as the labor forces were increased, some of the men were housed in standard 12 by 14 wall tents, which accommodated four men each. A large mess room and kitchen and storeroom space was also fitted up with a capacity of feeding about 400 men at one time. Great care was exercised throughout the work, in keeping the camp in a sanitary condition. This work was largely under the direction of doctors, who visited the camp each day to take care of possible sickness, and an arrangement was also made whereby those who were employed on the work voluntarily contributed a small amount from their wages for the services of these doctors. This amount also included hospital service when necessary. Due to this care there was very little sickness on the job.

As there were no accommodations for men with families near the shops the C.P.R. put into temporary service a train to carry the men back and forth from Calgary and several hundred men used this train each day. This arrangement helped the situation considerably, especially as the season advanced and all kinds of skilled and unskilled labor became more difficult to obtain. A standing order was placed through several labor agencies in Calgary to send men daily to the job. As the work neared completion the bunk houses and mess houses previously mentioned were turned over to the railway company to take care of its own men who were at that time living in cars on the property. This, of course, released the cars and permitted their use at other points.

The progress schedule will show the prosecution of the work, but it should be pointed out that it was not possible to break ground until April 1, 1912, and by Mar. 17, 1913, the locomotive shop was in full operation. When the magnitude of the work is considered, as also its distance from larger centres, it will be appreciated that a record for prompt performance has been established.

The work was designed and built in its entirety by Westinghouse, Church, Kerr & Co., consulting and constructing engineers, of New York and Montreal, working under the direction of J. G. Sullivan, M. Can. Soc. C.E., Chief Engineer, Western Lines C.P.R., and N. E. Brooks, M. Can. Soc. C.E., then Division Engineer, Calgary, now Engineer Maintenance of Way, Western Lines, C.P.R., Winnipeg.

Construction Work on the Canadian Northern Railway Eastern Lines.

The tremendous amount of railway construction which has been carried on west of Lake Superior for many years past has possibly made many oblivious to the fact that there has also been a lot of work done east of Port Arthur. Only recently we have been given an opportunity of looking into the amount of work done on the Canadian Northern lines in Ontario during 1912.

At the commencement of work in 1912 there was a force of nearly 5,000 men and over 600 horses, which was gradually increased until July, when it reached an average of about 19,500 men and about 1,500 horses. From July to the end of the year the force gradually fell to an average of about 6,500 men and a little over 800 horses, or an average for the 12 months of nearly 7,500 men and over 1,000 horses. It was expected to keep the force up to an average of 8,500 men, but the Balkan war prevented this. The work in Eastern Ontario suffered more from the labor condition than any other part, this being particularly noticeable on the Ottawa-Sydenham line, which at no time was fully manned. The total outlay in wages was nearly $6,000,000, or close on to $500,000 a week.

The grading and trainfilling statistics show the following averages per mile in cubic yards:—Montreal-Hawkesbury line, 26,000; Ottawa-Capreol line, 26,081; Sudbury-Port Arthur line, 26,473, an average of 25,305 for all lines under construction. The heaviest district on the Montreal-Port Arthur line is between Pembroke and Capreol, which runs about 28,130 cu. yds. per mile. There were over 11,500,000 cu. yds. moved during the year, equivalent to about 447 miles of completed grade, or 1.5 miles of completed grade for every working day in the year.

Up to the end of the year the following grading had been done:—Montreal to Hawkesbury, 30%; Ottawa to Pembroke, 32½%; Pembroke to Capreol, 34%; Sudbury and Port Arthur, 62½%, or 50% of the whole line between Montreal and Port Arthur. The estimated amount of grading to complete the line between Montreal and Port Arthur is about 11,500,000 cu. yds. or a little less than was moved in 1912 on all the Quebec and Ontario lines. With ordinary labor conditions the grading of this line should be completed this year west of Capreol, but at the commencement of the present season's work there was considerably more grading and trainfilling to be done on the Pembroke-Capreol district than any other, and it may not be possible to complete it this year. There is probably over 4,000,000 cu. yards to move, of which over 800,000 is solid rock, this being about double what was moved in 1912.

During 1912 there was used on the eastern lines 6,250,000 ft. of pine lumber, 32,500 ft. of cedar, 36,909 cu. yds. of concrete and 4,290 tons of steel for bridges. There were 246 miles of main line track laid, equal to 0.82 miles per working day.

Orders by Board of Railway Commissioners.

Beginning with June, 1904, Canadian Railway and Marine World has published in each issue summaries of orders passed by the Board of Railway Commissioners, so that subscribers who have filed our paper have a continuous record of the Board's proceedings. No other paper has done this.

The dates given of orders, immediately following the numbers, are those on which the orders took place, and not those on which the orders were issued. In many cases orders are not issued for a considerable time after the dates assigned to them.

19097. Apr. 21.—Approving location of G.T. Pacific Ry. station at Hinton, Alta., mileage 977.4 west of Winnipeg.

19098. Apr. 22.—Authorizing C.P.R. to cross G.T. Pacific Ry. Biggar Calgary Branch with its Wilkie-Anglia Branch, at mileage 42.89 from Wilkie, Sask.

19099. Apr. 21.—Authorizing Canadian Northern Branch Lines Co. to build its Sturgis to Hudson Bay Jct. line across 11 highways in Saskatchewan.

19100, 19101. Apr. 22.—Authorizing Toronto, Hamilton and Buffalo Ry. to build second track across 3 highways at grade in Thorold Tp., and across River Road, Crowland Tp., Ont.

19102. Apr. 22.—Relieving Vancouver, Victoria and Eastern Ry. and Navigation Co. (G.N.R.) from erecting fences along its right of way between Keremeos and Princeton, B.C., until land on either side, or in vicinity, becomes settled.

19103. Apr. 19.—Authorizing C.P.R. to build extension of spur for Rileys, Ltd., Calgary, Alta.

19104. Apr. 21.—Amending order 18943, Apr. 1, re location of G.T. Pacific Ry. station at Kwinitsa, B.C.

19105. Apr. 22.—Approving G.T.R. plans showing proposed structures over Peter, Mill, Ontario and Barrett Sts., Port Hope, Ont.

19106. Apr. 23.—Ordering G.T.R. to stop trains 22 and 27 at Les Cedres, Que., on flag on Sundays, to take effect Apr. 27; and approving location of station there.

19107. Apr. 22.—Authorizing C.P.R. to build road diversion at Elm Creek, Man., and to close existing crossing there.

19108. Apr. 23.—Authorizing C.P.R. to build additional track north of its main line across 20 highways from mileage 70 to 93, Moose Jaw Subdivision, Sask.

19109. Apr. 22.—Authorizing C.P.R. to build spur for Kelowna Farmers Exchange, Ltd., Armstrong, B.C.

19110. Apr. 22.—Ordering C.P.R., Canadian Northern Ry. and G.T. Pacific Ry. to allow inspection by Dominion Government counsel, or representative, J. P. Muller, of all books, returns, statements and documents required for verifying, amplifying or checking any information furnished or ordered furnished to Government counsel.

19111. Apr. 23.—Approving revised location of C.P.R. Swift Current Northwesterly Branch from mileage 35.32 to 111.65, from Swift Current, Sask.

19112. Apr. 23.—Approving character of proposed drainage works relating to Toronto, Hamilton and Buffalo Ry. tracks and lands in Townsend and Oakland Tps., Ont.

19113. Apr. 23.—Authorizing C.P.R. to connect with Calgary Power Co.'s spur at Seebe, Alta.

19114. Apr. 21.—Authorizing C.P.R. to build spur for Fernie-Fort Steele Brewing Co., Fernie, B.C.

19115. Apr. 23.—Approving Campbellton, Lake Ontario and Western Ry. (C.P.R.) plans showing proposed structures over Elgin and Prospect Sts., Bowmanville, Ont.

19116. Apr. 24.—Approving location of C.P.R. Swift Current Northwesterly Branch from mileage 111.9 to junction with Calgary and Edmonton Ry. Lacombe Easterly Branch in Sec. 18-36-10, w. 4 m., Alta., excepting between mileage 169 and 175; and authorizing the building across 93 highways.

19117. Apr. 24.—Authorizing C.P.R. to build extension to Standard Sanitary Mfg. Co.'s siding in Toronto.

19118. Apr. 23.—Rescinding orders 17552 and 17781, Sept. 21 and Oct. 16, 1912, re rates on pressed brick from Bradford, Pa., to Windsor, Ont.

19119. Apr. 23.—Dismissing complaint of Blind River Board of Trade and London Rolling Mill Co. alleging that G.T.R. and C.P.R. discriminate against Blind River and other points on north shore of Lake Huron, in favor of Sault Ste. Marie, Port Arthur and Fort William in rate on bar iron in carloads from Toronto, Hamilton and London.

19120. Apr. 26.—Authorizing Canadian Northern Ry. to build cutoff in Winnipeg from its yards, southeasterly along north side of River Park to east side of Pembina St., and rescinding order 17968, Oct. 2, 1912, which authorized connection of its Fort Rouge and eastern yards.

[illegible]—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to build bridge across Burnham St., Cobourg, Ont., mileage 120.74 from Glen Tay.

19122. Apr. 25.—Authorizing C.P.R. to build across road allowance at grade at Rosyth, Sask.

19123. Apr. 23.—Authorizing C.P.R. to build spur for Massey-Harris Co. in Swift Current, Sask.

19124. Apr. 26.—Authorizing C.P.R. to build temporary track, for one year from date, on its Bergen Northeasterly Branch across West Kildonan Road and Winnipeg Electric Ry., in Kildonan Municipality, Man.; trains of both companies to stop before making crossing.

19125. Apr. 23.—Authorizing C.P.R. to build road diversion at Neidpath, Alta., and close existing crossing there.

19126. Apr. 23.—Authorizing Saskatchewan Government to build highway across C.P.R. in s.e. ¼ Sec. 12-33-21, w. 2 m.

19127. Apr. 25.—Authorizing G.T.R. to build sidings for International Harvester Co. of Canada, Ltd., Hamilton, Ont.

19128. Apr. 25.—Approving Grand Valley Ry. Standard Freight Tariff, C.R.C. 3,

19129. Apr. 26.—Amending order 19074, Apr. 17, re diversion of Canadian Northern Ry. Oak Point Branch at Rosser, Man.

19130. Apr. 28.—Amending order 18954, Mar. 31, re building of C.P.R. main line to Golden townsite, B.C.

19131. Apr. 28.—Approving location of C.P.R. station at Kandahar, Sask.

19132. Apr. 28.—Authorizing C.P.R. to operate bridges 96.2 and 100.6, Sherbrooke Subdivision, Que.

19133. Apr. 28.—Authorizing G.T.R. to rebuild bridge 143, District 2, Montreal Division, to carry its line over White River, about 1 mile east of Upton, Que.

19134. Apr. 28.—Authorizing G.T. Pacific Branch Lines Co. to build Third St. and Souris Ave. across its Regina Boundary Branch at Frobisher, mileage 134.9 and 135.5 respectively, Cannington District, Sask.

19135. Apr. 28.—Amending order 18987, Apr. 7, by changing Engelheld to Engelfeld, re operation of station there by Canadian Northern Ry.

19136. Apr. 28.—Authorizing C.N. Ontario Ry. to build across channel between two islands in Riviere des Prairies, Que., at mileage 39.8 from Hawkesbury.

19137. Apr. 28.—Authorizing G.T.R. to use bridge 186 over Becancour River, near Lyster, Que.

19138 to 19141. Apr. 29.—Authorizing C.P.R. to build extension to spurs on Bureau Wharf, Three Rivers, Que.; to build spurs for Jewell Lumber Co., Hanbury, B.C.; City Cold Storage Co. and National Manufacturing Co., Regina, Sask.; and J. P. Marion, Montreal.

19142. Apr. 30.—Authorizing C.P.R. to build bridges 144.8, Portal Subdivision, Sask.; 14.3, 17.7, and 9.6, Brandon Subdivision, Man.

19143. Apr. 30.—Authorizing Canadian Northern Ry. to build its Delisle Branch across 29 highways.

19144. Apr. 29.—Authorizing G.T.R. to build siding for Gurney Foundry Co., Toronto.

19145. Apr. 26.—Authorizing Saskatchewan Government to build highway crossing over C.P.R. in s.e. ¼ Sec. 34-18-33, and close and convey to C.P.R. portion of regular road allowance between Secs. 34 and 27-18-33, w.p.m., temporary crossing about 600 ft. to south to be closed by C.P.R.

19146. Apr. 28.—Ordering Campbellford, Lake Ontario and Western Ry. (C.P.R.) to provide suitable farm bridge crossings for A. D. Colwill, J. Rickard and T. Penfound, and undercrossing for R. R. Stevens, Darlington Tp., Ont.

19147. Apr. 26.—Approving revised location of G.T. Pacific Branch Lines Co.'s Brandon Branch, mileage 11.55 to 13.88, Brandon District, Man.

19148. Apr. 25.—Authorizing Esquimalt and Nanaimo Ry. to build branch from main line between Victoria and Wellington, mileage 1.31, to Newton and Greer Co.'s premises, Esquimalt, B.C.

19149. Apr. 26.—Authorizing C.P.R. to use bridges at Ninth Ave. subway at 179.1, Calgary Subdivision; and 7.7 and 7.8, Laggan Subdivision, Alta.

19150. Apr. 30.—Approving revised location of C.P.R. Gleichen-Shepard Branch from mileage 15.63 to 27.90 from Gleichen, and authorizing the building across 13 highways.

19151 to 19153. Apr. 28, 29.—Approving change in location of C.P.R. station at Warner, Alta.; and location of stations at Ernfold, Dilkie and Sovereign, Sask.

19154. Apr. 28.—Amending order 18898, Mar. 20, re location of C.N. Ontario Ry. station at Janes.

19155. Apr. 30.—Authorizing C.N. Saskatchewan Ry. to build its Wroxton Westerly Branch across C.P.R. Minnedosa-Saskatoon Section, in s.w. ¼ Sec. 9-26-4, w. 2 m.

19156. Apr. 30.—Amending order 17923, Nov. 5, 1912, re building of G.T. Pacific Branch Lines Co.'s Regina-Moose Jaw Branch under Lake View Ave., Moose Jaw, Sask.

19157. Apr. 30.—Authorizing G.T.R. to build siding and spur for Maple Sand and Gravel Co., Vaughan Tp., Ont.

19158. May 2.—Approving location of C.P.R. station at Rokeby, Sask.

19159. May 2.—Authorizing Hull Electric Co. to build spur from its main line between Hull and Aylmer for Connaught Park Jockey Club of Ottawa, South Hull Tp., Que.

19160. May 2.—Approving plan of Mar. 14, showing Edmonton, Dunvegan and British Columbia Ry. Co.'s standard high wooden trestle frame bents.

19161. May 3.—Approving location of G.T. Pacific Ry. station at Yates, Alta., mileage 917 west of Winnipeg.

19162. May 2.—Amending order 18999, April 5, re location of C.P.R. and Kettle Valley Ry. joint station at Grand Forks, B.C.

19163. May 2.—Approving location of Esquimalt and Nanaimo Ry. station at mileage 2.7, Evans Road Crossing, Cowichan Lake Branch, Vancouver Island, B.C.

19164. Apr. 30.—Authorizing C.N. Ontario Ry. to build across two highways in Fraser Tp.

19165. Apr. 30.—Authorizing Canadian Northern Ry. to build its Delisle Branch across public road between Secs. 30 and 29-25-6, w. 3 m.

19166. May 3.—Authorizing C.P.R. to build bridges 21.9, London Subdivision, Ont., and 144.6, Portal Subdivision, Sask.

19167. Apr. 30.—Authorizing C.P.R. to build spur for General Supplies, Ltd., Calgary, Alta.

19168. May 2.—Approving location of C.P.R station at Penzance, Sask.

19169. Apr. 30.—Amending order 19053, Apr. 10, re location of C.P.R. Bassano Easterly Branch.

19170. May 3.—Authorizing Hamilton Cataract Power, Light and Traction Co. to erect power line over Toronto, Hamilton and Buffalo Ry., Saltfleet Tp., Ont.

19171. May 5.—Authorizing Toronto Suburban Ry. to build across C.P.R. into Prison Farm, Guelph Tp., Ont.

19172. May 3.—Ordering Canadian Northern Ry. to build fourth class station at Kendal, Sask., extend platform to 260 ft., and lay walk across station grounds to connect with sidewalk across the main street; work to be completed by October 1.

19173. May 5.—Authorizing C.N. Ontario Ry. to build bridge over Missinaibi River, Algoma District, mileage 222.5 from Sudbury Jct.

19174. May 5.—Ordering Canadian Northern Ry. to fence right of way at certain points east and west of Ochre River, to be completed by June 15.

19175. May 3.—Authorizing C.N. Ontario Ry. to build across 8 highways in Alice Tp., Ont.

19176. May 3.—Authorizing Canadian Northern Ry. to build spur for Tees and Percee Co., Edmonton, Alta.

19177. May 5.—Authorizing G.T.R. to rebuild bridge 265 at mileage 46.80, District 13, Hamilton Division, Ont.

19178. May 3.—Ordering that speed of trains over crossing east of Hanover station, Ont., be limited to 10 miles an hour.

19179. May 5.—Relieving G.T.R. from providing further protection at crossing two miles west of Drumbo, Ont.

19180. May 5.—Amending order 18941, Apr. 1, re Campbellford, Lake Ontario and Western Ry. (C.P.R.) connection with G.T.R. at mileage 93.2 from Glen Tay, Ont., by changing it to mileage 93.94.

19181. May 3.—Authorizing C.P.R. to build extension to spur for Northern Sand and Gravel Co., Milner, Man.

19182. May 5.—Authorizing C.P.R. to build bridges 4.9, near Norwood and Ardendale stations, Ont.

19183. May 5.—Authorizing C.P.R. to build road diversion and close existing crossing at mileage 13.20, Wilkie-Anglia Branch, Sask.

19184. May 3.—Authorizing C.P.R. to build extension to spur for Coquitlam Terminal Co., Vancouver, B.C.

19185. May 5.—Authorizing C.P.R. to build passing track and portion of Y at grade across road allowance at Roche Percee, Sask.

19186. May 3.—Approving location of C.P.R. stations at Stranraer, Czar, Rockhaven, Bounty and Cadogen, Sask.

19187. May 5.—Authorizing Hull Electric Co. to build spurs for R. and T. Ritchie Co., Aylmer and South Hull, Que.

19188. May 5.—Amending order 19098, Apr. 22, re crossing of G.T. Pacific Ry. Biggar-Calgary Branch by C.P.R. by G.T. Pacific Branch Lines Co. for G.T. Pacific Ry.

19189. May 5.—Authorizing J. R. Pole, Appin, Ont., to build farm crossing over G.T.R., Ekfrid Tp., Ont.

19190. May 6.—Extending to May 30 time for installation of interlocking plant at crossing by C.N. Ontario Ry. of C.P.R. and G.T.R., near Ottawa.

10191. May 5.—Approving locations of G.T. Pacific Ry. stations at Dandurand and Medicine Lodge, Alta.

19192. May 6.—Approving location of G.T.P. Branch Lines Co. station at Delacour, Alta.

19193. May 6.—Approving location of G.T. Pacific Ry. station at Duffield, Alta.

19194. May 5.—Authorizing Canadian Northern Ry. to build spur and Y's through Lots 7 and 9, Fort Saskatchewan Settlement, Alta.; work to be completed within three months from date.

19195. May 6.—Authorizing Esquimalt and Nanaimo Ry. to build bridge 24.04 across Cook's Creek (South Fork), Comox Extension, B.C.

19196. May 5.—Approving revised location of Campbellford, Lake Ontario and Western Ry. (C.P.R.) from mileage 0 at Glen Tay to mileage 38.5.

19197. May 5.—Amending order 19120, Apr.

[illegible] Canadian Northern Ry. [illegible] St., Winnipeg.

19198. May [illegible].—Authorizing C.P.R. to build spur for W[illegible] Gravel [illegible] Supply Co., Edmonton, Alta., [illegible] completed [illegible].

19199. May [illegible].—Authorizing C.P.R. to build across [illegible] ways in Edmonton, Alta.

19200. May [illegible].—Approving location of G.T. Pacific Ry. station at Skeena City, mileage [illegible], Prince Rupert East, B.C.

19201. May 3.—Ordering Canadian Northern Ry. forthwith to rebuild shelter at Wroxton, Sask., to afford accommodation equal to standard fourth class station; and to appoint agent by May 15.

19202. May [illegible].—Approving location of C.P.R. station at Herschel, Sask.

19203. May 7.—Approving location Canadian Northern Ry. station grounds at Hanna, Alta.

19204. May 7.—Approving location of G.T. Pacific Ry. stations at Galloway, Roundcroft and Hargrave, Alta.

19205. May [illegible].—Amending order [illegible], Nov. 6, 1912, re removal of hill near Gerrie's crossing by Toronto, Hamilton and Buffalo Ry.

19206. May 6.—Approving location and portion of revised location of C.N. Ontario Ry. through Pembroke, Stafford and Alice Tps., mileage 82.62 to 88.85 from Ottawa, excluding spur running into station grounds on Mary St., Pembroke.

19207. May 7.—Authorizing C.P.R. to build at grade additional main line track across road allowance at mileage 81.5 from Broadview, Sask., to divert road allowance and close existing crossing.

19208. May 7.—Authorizing C.P.R. to build extension to siding for Canadian Carbonate Co., Montreal.

19209. May 7.—Authorizing C.P.R. to build spur for Canadian Northern Ontario Ry. on Lot [illegible], Con. [illegible], and unsurveyed land in Nipigon Tp., Ont.

19210. May 7.—Authorizing C.P.R. to build at grade additional main line track across road allowance at mileage 71.2 from Broadview, Sask.; to divert road allowance and close existing crossing.

19211, 19212. May 5, 6.—Authorizing Toronto, Hamilton and Buffalo Ry. to build spur for Furnivall-New, Ltd., Henry New Estate, and Sawyer-Massey Co., Hamilton, Ont.

19213. May 7.—Authorizing C.P.R. to build spurs for Birds Hill Sand Co., Winnipeg, from existing spur.

19214. May 3.—Authorizing Toronto and Niagara Power Co. to erect wires across Toronto, Hamilton and Buffalo Ry in Saltfleet, Tp., and rescinding order 18898, Mar. 19, giving similar authorization.

19215. May 6.—Ordering G.T.R. to build a 30 ft. subway, with 14 ft. headroom, at crossing of Thompson Road, Bertie Tp., Ont., 20% (not to exceed $5,000) of cost to be paid out of railway grade crossing fund, 15% of remainder by Pere Marquette Rd., 30% by M.C.R., 47½% by G.T.R., and 7½% by Bertie Tp.; plans to be submitted within 30 days from date for approval, and work to be commenced within 30 days after approval, and completed within four months.

19216. May 7.—Amending order 191[illegible], Apr. 21, re C.P.R. spur for Fernie-Fort Steele Brewing Co., at Fernie, B.C.

19217. May 7.—Approving plans and location of G.T.R. station at Jordan, Ont.

19218. May 8.—Rescinding order 18862, Mar. 7, that unless Canadian Northern Ry. withdraw portion of its location plan within 20 days it shall take steps to acquire certain lots at Regina, Sask.

19219. May 7.—Ordering G.T. Pacific Ry. to erect a no. 2 B.R.C. flag station at Cooking Lake, Alta., plans to be submitted by June 1, and work to be completed by Aug. 1.

19220. May 8.—Approving location of G.T. Pacific Ry. station at mileage [illegible], Prince Rupert East, B.C.

19221, 19222. May 8, 7.—Authorizing G.T.R. to build sidings for A. Tessier, Penetanguishene, and Borden Milk Co., Norwich Tp., Ont.

19223. May 7.—Authorizing Canadian Northern Ry. to build spur across 3 highways in Alberta.

19224. May 8.—Authorizing C.P.R. to build spurs for Crown Grain Co., Winnipeg.

19225. May 5.—Ordering G.T.R. and C.N. Ontario Ry. to erect fences and cattle guards at farm crossing on Lot 17, Con. 3, Trafalgar Tp., at expense of J. Mason and Son, Oakville, Ont.

19226, 19227. May 9.—Authorizing Lake Erie and Northern Ry. to build across Concession, Walnut, Bruce and Main Sts., Galt, and to divert Grand Valley Ry. between station [illegible] and 937+69, North Dumfries Tp., Ont.

19228. May 9.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to build across Kingston Road at mileage 74.70 from Glen Tay, Ont.

19229. May 10.—Ordering C.P.R. to install gates, to be operated day and night, at Osler Ave., North Toronto: work to be completed within 2 months from date, 20% to be paid by the railway grade crossing fund, and remainder, with entire cost of operation and maintenance to be paid by the City and company equally.

19230. May 9.—Approving plan of temporary trestle to be built by Quebec, Montreal and Southern Ry. over St. Lawrence River at St. [illegible], Que.

19231. May 9.—Authorizing C.P.R. to build spur for East Kootenay Lumber Co., Ltd., of Jaffray, B.C., at mileage 2.4, Fort Steele Subdivision, Alberta Division, near Colvalli.

19232. May 9.—Ordering that crossings of King and John Sts., Weston, Ont., be protected by two sets of gates, operated day and night from tower placed to enable watchmen to see highway: cost to be paid,—1-5 by the railway grade crossing fund, and 1-3 of remainder by Weston Village, G.T.R. and C.P.R. together; cost of, with maintenance, by the last three equally.

19233. May 9.—Authorizing Central Ontario Ry. to build spur for Ontario Marble Quarries Co., Dungannon Tp., Ont.

19234. May 9.—Approving location of G.T. Pacific Ry. stations at Ansell, Obed, and Bickerdike, Alta.

19235. May 8.—Authorizing G.T.R. to build siding for Hinde and Dauch Paper Co. of Canada, Ltd., Toronto.

19236. May 10.—Ordering Campbellford, Lake Ontario and Western Ry. (C.P.R.) and Canadian Northern Ry. to build overhead crossing on farm of John Pearse, Cedar Grove, Scarborough Tp., Ont.

19237. Apr. 29.—Ordering that wages of watchman, appointed at Sunnyside crossing, Mimico, Ont., be paid equally by City of Toronto, G.T.R. and Toronto and York Radial Ry.

19238. May 10.—Ordering that when City of Hamilton, Ont., has provided underground conduits the G.N.W. Telegraph Co., C.P.R. Telegraphs and Bell Telephone Co. remove poles, wires and cables from portions of certain streets.

19239. May 9.—Ordering G.T.R. to protect crossing of King St., Cobourg, Ont., by a flagman, 20% to be paid by Town of Cobourg.

19240. May 12.—Amending order 18915, Apr. 14, re location of C.P.R. station at Vanguard, Sask.

19241, 19242. May 12.—Authorizing C.P.R. to build bridges, 28.6, near Hornby, Ont.; 22.2, Streetsville Jct., Ont.; 42.5, near Cardigan station, N.B.; 32.4 and 5.9, Brandon Subdivision, Man.; and 46.37, Broadview Subdivision, Manitoba Division, over Boss Hill Creek, Sask.

19243. May 8.—Authorizing C.P.R. to build road diversion and grade crossing in Sec. 12-20-17, w. 4 m.; and close that portion to be diverted within its right of way.

19244, 19245. May 12.—Authorizing Lake Erie and Northern Ry. to build under G.T.R. at Paris, Ont., and at grade across G.T.R. at station [illegible]+72.9.

The Canadian Pacific Railway to Expend $100,000,000 in Construction, Betterments, Etc., This Year.

Sir Thomas Shaughnessy, President, C.P.R., is reported as having cabled from London to Montreal, recently, as follows: "Since my arrival in England my attention has been drawn to a recently published cable message to the effect that the C.P.R. Co. contemplated an expenditure of $50,000,000 this year in Canada in laying double tracks, constructing branch lines and putting a tunnel through the Rocky Mountains, which will provide an alternative route with a much easier grade than now exists, and will enable the railway through the tunnel to be worked by electricity if required.

"That report can only refer to western Canada, for, as a matter of fact, our contemplated expenditure over the whole system during the near future will be more like $100,000,000, exclusive of new rolling stock.

"This will not involve another appeal to the London money market for fresh capital, because all our financial arrangements have been already made a long way ahead."

Railway Lands Patented.—Letters patent were issued during March, in respect of Dominion railway lands in Manitoba, Saskatchewan, Alberta and British Columbia, as follows:—

	Acres
Calgary and Edmonton Ry.	1,[illegible]
Canadian Northern Ry.	[illegible]
Canadian Pacific Ry. grants	2.15
Canadian Pacific Ry. roadbed and station grounds	[illegible]
Grand Trunk Pacific Ry.	44.80
Qu'Appelle, Long Lake and Saskatchewan Rd. and Steamboat Co.	623.50
Total	[illegible]

Traffic Orders by Board of Railway Commissioners.

[illegible]

C.N.R. Standard Freight Mileage Tariff.

19000. April 9.—Re application of Canadian Northern Ry., under sec. 327 of the Railway Act, for approval of its Standard Freight Mileage Tariff, C.R.C. no. E. 212, for use on its lines east of Port Arthur, superseding the Standard Freight Mileage Tariffs of the Canadian Northern Ontario, Canadian Northern Quebec, Niagara, St. Catharines & Toronto, Bay of Quinte, Central Ontario, Quebec & Lake St. John, and Irondale, Bancroft & Ottawa Railway Companies, it is ordered that the said tariff be approved.

Examination of Railway Companies' Records.

19110. April 22. The rates for carriage of freight traffic upon railway lines operating in Canada, west of Port Arthur. Upon the application of counsel for the Dominion Government, under sec. 26 of the Railway Act—it is ordered that the C.P.R., the Canadian Northern, and the G.T. Pacific Railway Companies, do allow inspection by counsel retained by the Dominion Government or their representative, J. P. Muller, of all books, returns, statements, and documents required by him for verifying, amplifying, or checking any of the information furnished or ordered to be furnished to counsel for the Government.

Rates From Bradford, Pa., to Windsor, Ont.

19118. April 23. Re order 17552, Sept. 21, 1912, made upon the application of the Cadwell Sand & Gravel Co., Ltd., and directing that the proportion, viz., 88c per ton, accruing to the G.T.R. as its percentage division of the joint rate of $1.60 a ton charged from Bradford, Pa., to Windsor, prior to April 20, 1912, be restored by the G.T.R. within 45 days from the date of the order; and order 17781, Oct. 16, 1912, postponing the effective date of such order until a rehearing of the matter should be had: Upon the rehearing at Ottawa, Jan. 21, 1913, it is ordered that the said orders 17552 and 17781, be rescinded, and that the application of the Cadwell Sand & Gravel Co. be refused.

Bar Iron Rates to Blind River.

19119. April 23. Re complaint of Blind River Board of Trade and London Rolling Mill Co., Ltd., alleging that the G.T.R. and the C.P.R. unjustly discriminate against Blind River and other points on the north shore of Lake Huron and in favor of Sault Ste. Marie, Port Arthur, and Fort William, in the rate charged on shipments of bar iron, in carloads, from Toronto, Hamilton, and London to Blind River and points, Sault Ste. Marie, Port Arthur, and Fort William; it is ordered that the complaint be dismissed.

Protection of Level Crossings by Signals.—The Board of Railway Commissioners is impressed with the large number of accidents occurring at level railway crossings (crossings of one railway by another) which are not protected by signal system, with or without derails approved by the Board; and has asked railway companies to show cause why an order should not issue requiring them to install, within three years, an interlocking system to be approved of by the Board for the protection of all level crossings which are not so protected, between tracks of steam railways, and between tracks of steam and electric railways.

Changes in the Government Railways Management.

The Government Railways Managing Board, established May 1, 1909, has been abolished, and F. P. Gutelius, M. Can. Soc. C.E., has been appointed General Manager of Government Railways, with jurisdiction over the Intercolonial and Prince Edward Island Railways. Following is the report of a committee of the Privy Council approved May 5:—

"On a memorandum from the Minister of Railways and Canals, representing that as the result of close and careful consideration of the existing system under which the operation of the Government Railways is immediately controlled, he is strongly impressed with the desirability of a change in the present system. The Minister represents that by an order in council of April 20, 1909, based on the statutory authority of the Government Railways Act, which empowered the Governor in Council, from time to time, to make regulations, inter alia, for the management, proper use and protection of the Government Railways, the then existing position of General Manager of Government Railways was abolished and a board was constituted, under the name of the Government Railways Managing Board, to supervise and direct all departments of the railways owned or operated by the Dominion Government. This arrangement came into effect on April 1, 1909, and has been continued up to the present time.

"The Minister, considering it expedient, recommends that, in pursuance of the above cited statutory authority, the following be fixed as the organization to be in force on and after May 1, 1913, for the Government Railways—the Intercolonial Ry. and the Prince Edward Island Ry.—as at present constituted, and as the same may hereafter be extended or modified; together with their respective branches; such organiation to be in supercession of the existing organization:—1. The Government Railways Managing Board to be abolished; 2. The position of General Manager of Government Railways to be substituted therefor; 3. F. P. Gutelius, of Montreal, to be appointed to the management of the said Government Railways, under the title of 'General Manager of Government Railways'; 4. The said General Manager to supervise and direct all departments of the said Government Railways; 5. The duties and power of the said General Manager to be as hereunder defined, viz.:—He shall have the powers usually vested in the executive of railway corporations; he shall prepare or modify, subject to the Government Railways Act and the Provident Fund Act, and, with the approval thereto of the Governor in Council first obtained, carry out rules and regulations, as follows: For the organization of the staff and officials of the said railways; for the conditions of employment of the railway service; for the purchasing of supplies and the sale of materials; for the ascertaining and collection of the railway tolls, dues and revenues; those to be observed by the conductors, engine drivers and other officers and servants, and by all companies and persons using such railways; those relating to the rolling stock to be used in the trains on such railways; 6. He shall make to the Minister of Railways and Canals a special and comprehensive report at the end of each fiscal year on the expenditures and receipts of the railways under his control, and on all occurrences and transactions of importance; and shall further furnish such reports as may from time to time be required of him by the Minister. The Minister further recommends that the said F. P. Gutelius shall hold office for a definite period of two years, and, thereafter, during the pleasure of the Minister, at a salary of $20,000 a year.

"The committee concur in the foregoing and submit the same for approval."

The members of the Government Railways Management Board, which has been abolished, were, A. W. Campbell, M. Can. Soc. C.E., Deputy Minister of Railways and Canals, Chairman; D. Pottinger, I.S.O., Assistant Chairman; E. Tiffin, General Traffic Manager; F. P. Brady, General Superintendent; and J. B. T. Caron, General Solicitor. Mr. Campbell will henceforth give his entire time to the department's work in Ottawa, which is increasing rapidly; Mr. Pottinger, who has served the country faithfully for a very long period, and who is 69 years of age, will be superannuated; Messrs. Tiffin and Brady are being retained in their respective positions as General Traffic Manager and General Superintendent for the present, and Mr. Caron's position, which was created Dec. 29, 1910, is being abolished.

F. P. Gutelius, M. Can. Soc. C.E., General Manager, Canadian Government Railways.

FREDERICK PASSMORE GUTELIUS, M. Can. Soc. C.E., was born at Mifflinburg, Pa., Dec. 21, 1864, and graduated from Lafayette College as civil engineer in 1887. He entered railway service in 1888, since when he has been, to 1892, Assistant Engineer and Assistant Supervisor, Pennsylvania Rd., Pittsburg, Pa.; 1885 to 1898, General Superintendent, Columbia and Western Ry.; 1898 to 1900, Superintendent, C.P.R., Nelson, B.C.; 1900 to 1902, in various positions in C.P.R. Engineering Department; 1902 to Mar., 1906, Engineer of Maintenance of Way, C.P.R., Montreal; Mar., 1906, to Sept. 15, 1908, Assistant Chief Engineer, Eastern Lines, C.P.R., Montreal; Sept. 15, 1908, to Dec. 30, 1910, General Superintendent, Lake Superior Division, C.P.R., North Bay, Ont.; Dec. 30, 1910, to Jan., 1912, General Superintendent, Eastern Division, C.P.R., Montreal; Jan., 1912, to April 30, 1913, one of the commissioners to investigate expenditure and other matters in connection with the construction of the National Transcontinental Ry.

DAVID POTTINGER, I.S.O., was born at Pictou, N.S., Oct. 7, 1843, and entered railway service, July, 1863, since when he has been, to May, 1871, clerk in freight office, Nova Scotia Ry., Halifax; May, 1871, to Nov., 1872, cashier, same road; Nov., 1871, to Aug., 1874, station master, Intercolonial Ry., Halifax, N.S.; Aug., 1874, to Feb., 1879, General Storekeeper, same road; Feb., 1879, to Nov., 1892, Chief Superintendent, same road; Nov., 1892, to Apr., 1, 1909, General Manager, Intercolonial Ry. and Prince Edward Island Ry., Moncton, N.B.; Apr. 20, 1909, to April 30, 1913, Member, Government Railways Managing Board, and in charge of the general office work and accounting department, and from Feb., 1910, to Apr. 30, 1913, also Deputy Chairman, Government Railways Managing Board. He also acted for the Board, as Chairman of the Provident Fund Board, and of the Insurance Association.

Canadian Pacific Railway Passenger Department Bulletins.

The C.P.R. Passenger Department has for some time past been issuing monthly bulletins to the departmental officials, including ticket agents, etc., which are unique and in advance of anything we have seen got out for a similar purpose. They are attractively printed on tinted, toned paper, 8 by 11 inches, and contain a vast amount of information that materially assists officials in keeping thoroughly posted, and aids them in securing business.

As an example, the April bulletin, which is before us, contains 8 pages of matter, under 23 headings, as follows:—C.P.R. track service, with details of changes in service all over the system; changes in station names; C.P.R. hotels, with particulars of opening dates for the summer houses; Edmonton bridge, progress of work and brief description; automatic block signalling system; equipment, list of orders placed; C.P.R. steamships, descriptive matter of the two new Pacific liners; Canadian Australian Royal Mail Line, description of s.s. Niagara; British Columbia coast steamships, illustrated description; C.P.R. forestry protection and development, ticket steering passengers to the Orient or Australia; minor children unaccompanied must not be ticketed via Canadiaan-Australian line; printed destination tickets; refunds; baggage arrangements; new tariffs; local tariff book; homeseekers excursions; conventions; Brockville-Morristown ferry; connecting steamer lines; Canadian progress, with special relation to Toronto's development; Canadian West, development notes, containing a lot of information showing the progress of western communities. Excellent illustrations are given of the dining saloons of the new Pacific steamships and of the B. C. coast fleet.

The bulletins are issued by G. C. Wells, Assistant to Passenger Traffic Manager, Montreal, who is performing through them a service that cannot fail to stimulate the department's various officials and to equip them more thoroughly for the development of increased passenger travel.

* * *

A press report, purporting to have been received from Ottawa, dated Apr. 28, and published in the daily press recently, stated that the Dominion Government had awarded a contract to F. H. Hopkins and Co., Montreal, for machinery for dredges at the proposed Hudson Bay Ry. terminal, and the amount of the contract was given as $13,500. We are advised by the firm mentioned that they know nothing of such a contract having been awarded them.

Canadian Railway
AND
Marine World
ESTABLISHED 1898

Devoted to Steam and Electric Railway, Marine, Express, Telegraph, and Railway and Canal Contractors' Interests.
Official Organ of the various Canadian Transportation Associations.

ACTON BURROWS, LIMITED - Proprietors.
70 Bond Street, Toronto, Canada.

ACTON BURROWS, A.Can.Soc.C.E.
Managing Director and Editor-in-Chief.
AUBREY ACTON BURROWS - Secretary and Business Manager.

Associate Editor - - - JOHN KEIR
Associate Editor - - - DONALD F KEIR
Mechanical Editor - FREDERICK H. MOODY, B.A.Sc.

Canadian Advertising Representative - W. H. HEWITT
United States Representative - A FENTON WALKER
143 Liberty Street, New York City
Representative for Great Britain - J. MEREDITH MCKIM
17 Cockspur Street, London, S.W.

SUBSCRIPTION PRICES, INCLUDING POSTAGE:

TORONTO AND WEST TORONTO POSTAL DELIVERY, $1.25 a year.

To other places in CANADA, and to NEWFOUNDLAND AND GREAT BRITAIN, $1 a year.

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SINGLE COPIES, 15 cents each, including postage.

The best and safest way to remit is by express money order. Where one cannot be obtained, a post office money order or bank draft, payable at par in Toronto, may be sent. Cheques or drafts not payable at par in Toronto cannot be accepted. Remittances should be made payable to CANADIAN RAILWAY AND MARINE WORLD.

NOTICE TO ADVERTISERS.

ADVERTISING RATES furnished on application.

ADVERTISING COPY must reach the publishers by the 10th of the month preceding the date of publication.

TORONTO, CANADA, JUNE, 1913.

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April Copies of Canadian Railway and Marine World Wanted.

Through an unfortunate oversight in our office, no copies of Canadian Railway and Marine World were filed, and this was not discovered until the supply of the edition had been exhausted.

We are particularly anxious to get fifteen copies at least, and should be very much indebted to any subscribers who have April copies on hand, and who do not bind them in an annual volume, as many do, if they will mail them to us.

Prizes for Flower Gardens on the Canadian Pacific Railway.

The C.P.R., as in past years, is offering prizes for the best flower gardens on each general superintendent's division, as follows:—

General superintendent's grand prize for best station garden on whole division, $25.

Locomotive foreman's prize for best flower garden at locomotive house, 1st, $10; 2nd, $5.

Section foreman's prize for best flower garden surrounding section house, 1st, $10; 2nd, $5.

For best station flower garden on each superintendent's division. 1st, $10; 2nd $5.

Each man can only secure one prize, that is to say, if a station agent secures the general superintendent's grand prize, he cannot obtain the superintendent's prize.

Railway Route Maps Approved.

The Minister of Railways and Canals has approved route maps covering the following lines,—

Canadian Pacific Ry., Apr. 16, from Kipp, Alta., northeasterly, 40 miles;

Apr. 16, from Suffield to Blackie, Alta., about 90 miles;

Canadian Northern Ry., Apr. 16, revision of Regina-Red Deer line, 20.18 miles;

Apr. 19, from Deer Lake to Callendar, 68 miles.

Conductors' Wages on the Canadian Northern Railway.

It is said that an arrangement is being made between the Canadian Northern Ry. and its conductors, which will effect a settlement of the differences as to wages which has been the subject of investigation under the Industrial Disputes Investigation Act, 1907. The Board of Conciliation consisted of Mr. Justice Haggart, of the Manitoba High Court, chairman; W. Cross, Winnipeg, representing the company, and H. Holt, representing the men. The investigation was brought about owing to the company declining to grant a demand of the conductors for various changes in the existing schedule of rules and wages, including an increase of wages and a reduction in working hours from nine to eight a day. The board began its sittings Mar. 31, and its report was submitted to the Minister of Labor, April 25. The report, which is signed by the Chairman and H. Hall, recommends the adoption on July 1 of a new schedule providing for the payment to passenger conductors of an average wage of $165 a month, conductors on mixed and way freight trains to receive 4.80c per mile, and conductors on through freight and working trains 4.25c per mile. These rates involve increases over the schedule at present in force. The board also recommends that eight hours work per day "should be considered sufficient except in extreme cases." Mr. Hall, however, adds a statement in which he claims that the increases given in some of the mileage rates were inadequate, and that the new schedule should have been made effective from Jan. 6, instead of being set forward to July 1. A minority report was submitted by Mr. Cross, in which he claimed that the minimum guaranteed wages of the company's conductors compared favorably with the salaries of professional men, and had been increased over 40% since 1896, when the schedule was agreed upon, which schedule was 10% higher than the wages which were paid in 1896. He also claimed that the new schedule in some matters violated certain well known union principles.

Since the publication of the report the parties have been endeavoring to get together, with the result that an understanding has now practically been reached.

Canadian Railway Club's Annual Meeting.

The report presented at the annual meeting in Montreal, May 13, shows a membership of 800, with receipts for the year ended April 30 of $4,229.85, and a balance on hand of $3,626.93. The retiring President, Jas. Coleman, Superintendent, Car Department, G.T.R., was given a past president's jewel. The following are the officers, etc., for the current year:—

President, R. W. Burnett, General Master Car Builder, C.P.R.; 1st Vice President, W. McNab, Principal Assistant Engineer, G.T.R.; 2nd Vice President, C. Murphy, General Superintendent of Transportation, C.P.R.;

Executive Committee.—D. Crombie, General Superintendent of Transportation, G.T.R.; R. M. Hannaford, Assistant Chief Engineer, Montreal Tramways Co.; Prof. H. O. Keay, McGill University; E. C. Lloyd, Assistant Auditor of Stores and Mechanical Accounts, C.P.R.; J. Hendry, Master Car Builder, G.T.R.; L. C. Ord, General Car Inspector, C.P.R.

Audit Committee.—E. B. Tilt, Engineer of Tests, C.P.R.; W. H. Robb, Canuck Supply Co.; C. Manning, Secretary to Superintendent of Motive Power, G.T.R.

Secretary.—Jas. Powell, Chief Draughtsman, G.T.R.; Treasurer, W. H. Stewart, Assistant Superintendent, C.P.R.

All of the officers, etc., elected are residents of Montreal, except W. H. Stewart, of Ottawa. The meeting was followed by a smoking concert.

Dominion Government Railway to Hudson Bay

A short train made the first trip across the bridge over the Saskatchewan River at Pas, Man., May 15. This marks the completion of the first stage of the work, and gives direct railway connection with the construction work now in progress to Port Nelson. Tracklaying is in progress, and it is expected to have the first 85 miles completed this season. The tracklaying and ballasting is being done by Boyd and McArthur, and the building of stations, etc., by McMillan Bros., Winnipeg. Forty carloads of material for the general contractors were delivered at Pas, May 5, and are being taken in to the grading camps beyond mileage 85. (May, pg. 225.)

In order to prevent the crowding out of paying passengers on its trains, the Chicago and Alton Rd. has issued instructions to its employes to take places in smoking cars, whenever necessary, when travelling on the company's service.

Mainly About Transportation People.

Mrs. Flock, wife of J. H. FLOCK, K.C., London, Ont., Honorary Counsel, Canadian Ticket Agents' Association, died May 16.

Miss Helen McNicoll, daughter of D. McNicoll, Vice President, C.P.R., has been elected a member of the Royal Society of British Artists.

D. McNICOLL, Vice President, C.P.R., returned to Montreal, May 1, via Victoria, Vancouver and Winnipeg, after a short holiday in California.

R. BLACK, Trainmaster, Pere Marquette Rd., St. Thomas, Ont., was reported, May 7, to be recovering from an attack of typhoid fever.

Mrs. Phippen, wife of F. H. PHIPPEN, General Counsel, Canadian Northern Ry., Toronto, was presented at court in London, Eng., recently.

J. QUINLAN, District Passenger Agent, G.T.R., Montreal, who has not been in good health recently, left early in May for Hot Springs, Ark., for treatment.

J. QUINLAN, District Passenger Agent, G.T.R., Montreal, who has not been well for some little time, went to Hot Springs, Ark., early in May, for treatment.

A. BRITTAIN, for many years [illegible] general [illegible] Montreal, died there May 7. His father was a well known railway contracting engineer in the east of England.

A. KNIGHT, foundry foreman, was presented with a [illegible] by the employes of the Canadian Northern Ry. car shops at Winnipeg, May 1, on retiring from the company's service.

M. G. MURPHY, District Passenger Agent, C.P.R., Toronto, left for Mount Clemens, Mich., May 1, to recuperate after an attack of inflammatory rheumatism. He returned to duty May 19.

A. D. SWAN has resigned his position as assistant engineer to the Montreal Harbor Commission, and will leave shortly to take charge of some harbor construction work in Chile, South America.

M. T. MALONEY, an employe of the Allan Steamship Line, and well known in marine circles at Montreal, Halifax, N.S.; St. John, N.B., and Boston, Mass., died at Montreal, May 15.

The Canadian Ticket Agents' Association has admitted the following as members: H. G. Letch, B. of Q. R., Tamworth, Ont.; R. Harvey, G.T.R., Parkhill, Ont.; C. E. Jenney, G.T.R., Toronto.

H. M. PRICE, who died at Quebec, April 29, was a [illegible] of the Quebec Bridge Co., and up to the time of his death was a director of the Lake Superior Corporation.

H. WILLIAMS was presented with a mahogany [illegible] by the staff of the G.T.R. pay office, Montreal, recently, on his retiring from the position of Paymaster.

H. P. TIMMERMAN, Industrial Commissioner, C.P.R. Eastern Lines, and Mrs. Timmerman, [illegible] for the summer at Duck Cove, near St. John, N.B.

W. RICHARDSON, [illegible] Richardson, Ltd., Newcastle-on-Tyne, Eng., [illegible] visit.

F. M. RATTENBURY, who designed the C.P.R. hotel at Victoria, B.C., and who is Reeve of Oak Bay, near that city, has presented [illegible] for park purposes.

D. C. COLEMAN, General Superintendent, C.P.R., Manitoba Division, gave an address on "The Human Side of a Great Corporation," before the Winnipeg Advertising Club, May 9.

D. HOGAN, formerly Foreman, C.P.R. Bridge and Building department at Windsor, Ont., was presented with a sum of money by the employes of the department, May 5, on retiring after 28 years service.

W. E. DUPEROW, General Agent, Passenger Department, Grand Trunk Pacific Ry., Vancouver, visited his office, May 1, after having been absent for some time on account of illness.

SIR THOS. G. SHAUGHNESSY, Lady Shaughnessy and the Misses Shaughnessy, have returned to Montreal, being passengers on the Empress of Ireland, which reached Quebec from Liverpool, May 23.

F. P. GUTELIUS was the principal guest at a dinner given by the Halifax Board of Trade, May 16, on his first visit to the city as General Manager of the Government Railways.

G. T. Bell,
Passenger Traffic Manager, Grand Trunk Ry. and G.T. Pacific Ry.

M. E. DUNCAN, Vice President and General Manager, Canadian Car and Foundry Co., Montreal, is recovering from the effects of a recent operation at Johns Hopkins Hospital, Baltimore, Md.

J. A. TELFER was presented with a purse of gold by the G.T.R. passenger staff, Toronto, May 19, on retiring from the position of city ticket agent there. He has retired from railway work on superannuation, after about 50 years service.

T. BELL, who recently retired from the C.P.R. advertising department, Montreal, has received the compliment of gifts from the staff, for himself, wife and children, recently, prior to his leaving to take up his residence in Winnipeg.

A. L. Smith, a gentleman cadet at the Royal Military College, Kingston, Ont., aged 17, and son of the late CECIL B. SMITH, [illegible] of Toronto, was drowned near Kingston, May 2, with another cadet while canoeing.

W. DOWNIE, General Superintendent, Atlantic Division, C.P.R., St. John, N.B., has been granted leave of absence for a year. He will pay a short visit to the Pacific coast and spend the remainder of his holiday in Europe.

T. BOWES, who has for some years been in charge of the Intercolonial Ry. freight sheds at Halifax, N.S., retired May 1, after a continuous service of 50 years with the I.R.C. and its predecessors. He was presented with an address and a purse of gold.

R. WAUGH was presented with a quantity of cut glass, recently, by a number of business friends, on the occasion of his retirement from the position of G.T.R. agent at Stratford, Ont., to take a new position in the transportation department at Hamilton.

Z. A. LASH, K.C., director and Senior Counsel, Canadian Northern Ry., Toronto, has been appointed to represent the Dominion Government on the special commission to adjust the differences between the Dominion and British Columbia Governments, regarding subsidies.

W. J. GRANT, District Freight Agent, C.P.R., Hamilton, Ont., and Mrs. Grant, sailed from Montreal, May 15, by the s.s. Tyrolea, for Trieste, Austria, for a trip through Austria, Germany, Belgium, Holland and England, expecting to return to Hamilton about Aug. 1.

J. L. WELLER, Chief Engineer, Welland Canal, who recently returned from the Panama Canal, where he had been to study various matters in connection with canal construction, has had one eye removed. His eyesight has troubled him for some time, and the removal of one eye was decided on in the hope of saving the sight of the other.

C. MURPHY, General Superintendent of Transportation, C.P.R. Eastern Lines, became suddenly ill at Toronto, May 15, and was taken to the Western Hospital, where he was found to be suffering from appendicitis. He was, however, much better the following day, and subsequently returned to Montreal, where he rapidly improved.

D. M. McINTYRE, K.C., Chairman, Ontario Railway and Municipal Board, was presented with an oil portrait of himself, and a tie pin, by citizens of Kingston, Ont., May 1, in recognition of his services as Mayor and City Solicitor there. He handed over the portrait to the Mayor to be placed in the city hall with portraits of other former mayors.

G. E. McGLADE, C.P.R. city ticket agent, agent C.P.R. telegraphs, and agent Dominion Express Co., Brockville, Ont., has resigned these positions to become secretary of the reorganized Grimsby Beach Co., Grimsby, Ont. On May 9, he was presented with an address and $500 in gold by the citizens of Brockville, on leaving to take over his new position.

COLLINGWOOD SCHREIBER, C.M.G., General Consulting Engineer to Dominion Government, arrived in Vancouver, B.C., from Ottawa, May 17, on his way to the Hazleton district to make an inspection of construction on the Grand Trunk Pacific Ry. He was accompanied on part of the trip by Mrs. Schreiber and Miss Grace Ritchie.

J. R. BOOTH, who was the builder and practically the owner of the Canada Atlantic Ry. (now part of the G.T.R.), had a narrow escape from drowning, May 6, owing to the bursting of a dam on the Ottawa River, at one of the lumber plants which he operates. He is over 80 years of age and was superintending the work at the yard at the time of the accident.

SIR WM. MACKENZIE, Lady Mackenzie

and A. D. Davidson, Land Commissioner, Canadian Northern Ry., arrived at Quebec by the s.s. Royal Edward May 5, after spending some weeks in Europe. Sir William is reported to have stated that he had secured ample funds for some time to come, which would be applied largely to the extension of the main transcontinental line and other lines already in course of construction.

E. H. McHENRY, formerly Chief Engineer, C.P.R., who recently resigned the vice presidency of the New York, New Haven & Hartford Rd., has formed a partnership with W. S. Murray, the Chief Electrical Engineer of the company, who has also resigned. The firm, to be known as McHenry & Murray, engineers, have opened an office in New Haven, Conn., as railway engineers, and will take over practically the entire electrical engineering force of the New Haven Rd. and will direct all the new electrification work of that company as consulting and constructing engineers.

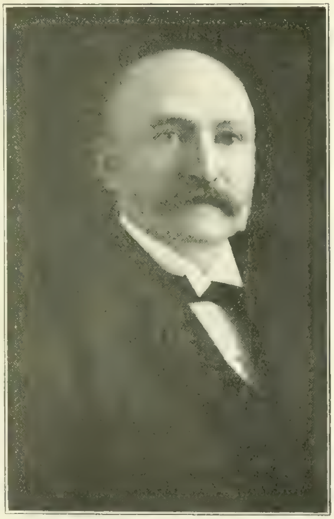
J. A. CHARTERS, whose appointment as Agent, Sleeping and Dining and Parlor Cars and News Department, C.P.R., Vancouver, B.C., was announced in our last issue, was born at Moncton, N.B., Sept. 3, 1884, and entered railway service Mar. 12, 1906, since when he has been, to Sept., 1906, stenographer, General Manager's office, Intercolonial Ry., Moncton, N.B.; Sept., 1906, to Mar., 1907, stenographer, Sleeping, Dining and Parlor Car Department, C.P.R., Montreal; Mar. to Aug., 1907, stenographer, Engineering Department, G. T. Pacific Ry., Winnipeg; Aug., 1907, to Dec., 1908, chief clerk, Sleeping, Dining and Parlor Cars and News Department, C.P.R., Winnipeg; Dec., 1908, to Feb., 1913, chief clerk, same department, C.P.R., Vancouver, B.C.

MALCOLM C. MACFARLANE, who has been appointed acting District Engineer, District F, National Transcontinental Ry., was born at Almonte, Ont., Apr. 23, 1855, and commenced railway service in 1881, since when he has been, to 1885, Resident Engineer, Kingston and Pembroke Ry., between Mississippi station and Renfrew, Ont.; 1889 to 1890, Assistant Engineer in connection with sewerage plans at Brockville, Ont.; 1891 to 1895, Assistant State Engineer in Wyoming; 1895 to 1898, in U.S. Government service in Wyoming, Kansas and Oklahoma; 1898 to 1905, Location and Construction Engineer, Canadian Northern Ry., in Ontario, Manitoba, Saskatchewan and Alberta; 1905 to Apr., 1913 Division Engineer, Division F, National Transcontinental Ry. in Ontario.

G. T. BELL, who has been appointed Passenger Traffic Manager, G.T.R. and G.T. Pacific Ry., Montreal, was born there Sept. 7, 1861, and entered railway service in 1878, since when he has been consecutively, to Nov., 1880, clerk, car mileage office, Great Western Ry.; Nov., 1880, to Nov., 1882, stenographer, General Passenger Agent and Rate Clerk's Office, same road; Nov., 1882, to Jan. 1, 1884, Chief Clerk, Assistant Passenger Agent's Office, G.T.R.; Jan. 1, 1884, to Apr. 25, 1892, Chief Clerk, General Passenger Agent's Office, same road; Apr. 25, 1892, to Apr., 1896, Assistant General Passenger Agent, same road, Montreal; Apr., 1896, to Aug., 1899, Assistant General Passenger and Ticket Agent, same road, Montreal; Aug., 1899, to May, 1900, First Assistant General Passenger and Ticket Agent, same road, Chicago, Ill.; May, 1900, to Aug., 1908, General Passenger and Ticket Agent, same road, Montreal; Aug., 1908, to Apr., 1909, General Passenger and Ticket Agent, G.T.R., and G.T.P.R., Montreal; Apr., 1909, to May, 1913, Assistant Passenger Traffic Manager, G.T.R. and G.T.P.R., Montreal.

Death of W. E. Davis, Passenger Traffic Manager, Grand Trunk Railway.

The death took place at Ashleigh, Ste. Anne de Bellevue, Que., somewhat suddenly, May 15, of W. E. Davis, one of the best known railway traffic officials on the continent. He was at his office on May 13, but was taken ill on the following day, and died as stated. He had been suffering for some time of cirrhosis of the liver. The funeral took place May 17, when a large number of representatives of Canadian and U. S. railways attended. A special train left Bonaventure station, conveying a large party to Ste. Anne de Bellevue, where a portion of the service was conducted. The coffin was subsequently placed on the official car Muskoka, the special train returned to Montreal, and the funeral service was completed at Mount Royal cemetery. While this was in progress, flags on all G.T.R. buildings from the Atlantic to the Pacific were half-masted, and the city ticket offices in the larger cities were closed for half an hour. He was a member of the Isleway Club of Ste. Anne de Bellevue, and the Canadian Club of Montreal, and was also Vice President of the Northern Navigation Co., one of the constituent companies of the Richelieu and Ontario Navigation Co.


The Late W. E. Davis.

He was born at Wilson, N.Y., Aug. 2, 1850, and entered railway service in 1868, as office boy on the Hannibal and St. Joseph Rd., now a part of the Burlington Rd. In Aug., 1877, he was appointed Passenger Agent, Chicago and Lake Huron Rd., Chicago, Ill., which later included the Detroit, Grand Haven and Milwaukee Ry., Toledo, Saginaw and Muskegon Ry., and Cincinnati, Saginaw and Mackinaw Ry., remaining in that capacity until the consolidation of these G.T.R. subsidiary companies under the new management, Apr. 1, 1896, since when he has been, to May 1, 1900, General Passenger Agent, G.T.R., Montreal; May 1, 1900, to May 15, 1913, Passenger Traffic Manager, G.T.R., and from Sept., 1908, also Passenger Traffic Manager, G.T. Pacific Ry., Montreal. He was also a director and one of the Vice Presidents of the Northern Navigation Co., one of the constituent companies of the Richelieu and Ontario Navigation Co.

The higher officials of the company have given expression to their appreciation of the late Mr. Davis' work, and of his unassuming and kindly nature, which is evidenced by his large circle of friends of all classes. On account of his great liking for the French Canadian people, arrangements were made whereby he was buried near the grave of the late Dr. Drummond, the habitant poet. The late Mr. Davis was one of the earliest subscribers to Canadian Railway and Marine World, being on the subscription list continuously from its inception in 1898.

The Grand Trunk Railway Semi Annual Meeting.

The report for the half year ended Dec. 31, 1912 was considered at the semi annual meeting in London, Eng., recently. The revenue account shows gross receipts, £4,612,758 11s. 0d.; working expenses, £3,334,682 4s. 10d.; net receipts, £1,278,076 6s. 2d.; less balance from rentals, outside operations and car mileage, £87,084 13s. 9d., leaving a total net revenue £1,190,991 12s. 5d.; to which are added amounts received from controlled companies and general interest account, £192,055 15s. 6d., making total net revenue receipts of £1,383,047 7s. 11d., an increase of £197,992 as compared with the same period in 1911.

The Chairman of the Board, A. W. Smithers, in moving the adoption of the report, referred to the death of Sir William H. White, and the appointment of W. Molson Macpherson as his successor as a director. In analyzing the report he alluded to the largely increased item for car rentals, due to having to release G.T. Pacific Ry. cars, which had been used on the G.T.R., causing the company to use cars of other roads, and intimated that power will shortly be asked for the incorporation of the Canada Atlantic Ry. as an integral portion of the system, so that the finances may be rearranged and fresh capital introduced, which will be necessary on account of expected increased traffic due to the operation of the G.T. Pacific Ry. The Detroit, Grand Haven and Milwaukee Ry. finances will also be reorganized shortly. In dealing with the G.T. Pacific Ry. he stated that track had been laid for 1,124 miles west of Winnipeg and 195 miles east of Prince Rupert, leaving about 427 miles to complete, which it is anticipated will be completed by the fall.

Reference was also made to the difficulties experienced during the past year, due to the unexpected death of the then President, C. M. Hays, and a difficult money market, the latter caused by the Balkan war and possible European complications. A number of new works were postponed or stopped, in order to continue work on the G.T.P.R. main line, and generally speaking, the difficulties had been surmounted. He eulogized the President, E. J. Chamberlin, considering his record to date highly satisfactory, judged by the test of the state of traffic.

The report was adopted, and the following dividends for the half year declared: 2% on the 4% guaranteed stock; 2½% on the first preference stock; 2½% on the second preference stock, and 2% on the third preference stock. The Grand Trunk Act, 1913, and the Grand Trunk Pacific Act, 1913, were adopted, and the retiring directors, Sir Henry M. Jackson, Sir Felix O. Schuster, Lord Welby, and E. J. Chamberlin, were re-elected; as were also the auditors, H. C. Newton, for England, and B. H. Brown, for Canada.

Railway Rolling Stock Notes.

The Intercolonial Ry. has ordered 500 steel frame box cars, 30 tons capacity, from the Nova Scotia Car Works.

The Duluth, Winnipeg and Pacific Ry. (C.N.R.) has ordered 200 steel underframe flat cars, and has received 100 box cars from the Mount Vernon Car Mfg. Co.

The C.P.R., between Apr. 12 and May 14, ordered the following rolling stock:—14 vans, 3 freight refrigerator cars, 8 stock cars, and 1 stores supply car, from its Angus Shops, and 500 steel frame box cars from the Canadian Car and Foundry Co.

The Intercolonial Ry. has received the following additions to rolling stock,—140 box cars, 60,000 lbs. capacity, and 32 box cars, 80,000 lbs. capacity, from Canadian Car and Foundry Co.; 9 box cars, 60,000 lbs. capacity, from Nova Scotia Car Works; 4 switching locomotives from Canadian Locomotive Co., and 1 freight locomotive from Canada Foundry Co.

The Grand Trunk Ry. has ordered 2,000 box cars from the Canadian Car and Foundry Co.; 2,000 box cars from the Eastern Car Co.; 50 Mikado locomotives from the Montreal Locomotive Works; 3,000 box cars from the Western Steel Car Co.; 1,000 gondola cars from the Pressed Steel Car Co.; and 25 Mikado locomotives from the Baldwin Locomotive Works.

The Canadian Copper Co., Copper Cliff, Ont., has ordered 25 Otis all steel ore cars, from Hart-Otis Car Co. These cars will be built by Canadian Car and Foundry Co. Following are the chief dimensions:—

[illegible]

The Canadian Northern Ry., between Apr. 14 and May 14, received the following additions to rolling stock:—6 first class cars, 5 baggage cars, 200 box cars, from Canadian Car and Foundry Co.; 3 second class cars, 100 flat cars, from Crossen Car Co.; 80 Hart cars, from Hart-Otis Car Co.; 2 combination cars, from Preston Car and Coach Co.; 10 light and 15 heavy ten wheel locomotives from Montreal Locomotive Works; [illegible] locomotives from Canadian Locomotive Co.

The C.P.R., between Apr. 12 and May 14, received the following additions to rolling stock:—[illegible] tourist cars, 5 sleeping cars, 10 suburban cars, 6 box baggage cars, 12 baggage and express cars, 6 class G2 locomotives and 2 class E3 locomotives, from its Angus shops; 567 steel frame box cars, 423 steel frame flat cars, 1 ballast car; 3 tourist cars, from Canadian Car and Foundry Co.; 284 steel frame [illegible] steel frame box cars from Nova Scotia Car Works; [illegible] from Canadian Allis-Chalmers, Ltd.; 2 Jordan ballast [illegible] locomotives from Montreal Locomotive Works; [illegible] Smith Co.; 16 air dump cars from Western Wheeled Scraper Co.; 10 sleeping cars from Pullman Co.

[illegible] tons capacity, to C.P.R.; 2 slag cars, for its [illegible] car, to F. H. Hopkins and Co.; 104 steel frame box cars, 30 tons capacity, 161 steel frame box cars and 19 wooden ballast cars, 40 tons capacity, to Intercolonial Ry.; 3 steel street car bodies, to Montreal Tramways Co.; 100 wooden ballast cars, to J. D. McArthur Co.; 10 steel underframe flat cars and 8 wooden ballast cars, 40 tons capacity, to Toronto, Hamilton and Buffalo Ry.; 8 steel underframe flat cars, 40 tons capacity, to Windsor, Essex and Lake Shore Road Ry.

Reports as to large orders for rolling stock to be placed by the Canadian Northern Ry. and the G.T. Pacific Ry. are running their course through the daily press, and have even been reproduced as authentic by some technical papers. The value placed on these phantom orders is $85,000,000, of which the C.N.R. is credited with $50,000,000 worth, and the G.T.P.R. with the balance. So far as one of the companies is concerned, we have been officially advised that there is no truth in the report, and its author can scarcely be considered responsible, and probably the same can be said of the report as to the other company. The information as to rolling stock ordered and received by the various companies, as published by Canadian Railway and Marine World, is gathered from official sources, and great care is exercised to have it as complete and up to date as possible, so that no one interested in such matters need go beyond our pages for such information as he may require on the subject.

Railway Finance, Meetings, Etc.

Canadian Pacific Ry.—The directors have declared a dividend of 2½% on the common stock, for the quarter ended Mar. 21, being at the rate of 7% per annum, from revenue, and 3% per annum from interest on the proceeds of land sales and from other extraneous assets, payable June 30, to shareholders of record May 31.

Grand Trunk Pacific Ry.—There has been filed with the Secretary of State at Ottawa certificates showing that the G.T.P. Ry. Act of 1913 had been assented to and accepted by the holders of debentures issued under chap. 100 of the statutes of 1906, and by the shareholders.

Grand Trunk Ry.—There has been filed with the Secretary of State at Ottawa, certificate of the chairman of the general meeting of shareholders held in London, Eng., April 10, at which the G.T.R. Act of 1913 was assented to and accepted.

Kettle Valley Ry.—A special meeting of shareholders will be held at 45 King St. West, Toronto, June 2, to approve of a lease of the company's lines to the C.P.R. Co., and to authorize an issue of bonds to defray the cost of construction of the line.

Lake Erie and Detroit River Ry.—The annual meeting was held May 6. Following are the directors for the current year:—S. M. Felton, E. N. Weller, Detroit, Mich.; A. [illegible], H. L. McDowell and J. A. McDougall, Walkerville, Ont.

Napierville Jct. Ry.—The Delaware and Hudson Co.'s report for 1912 shows an increase in N.J.R. operating revenue over 1911 of $12,400.11, and in operating expenses an increase of $11,089.12. The net income was $10,416.44, or 3.23% on the capital stock outstanding. The reasons given for the increase in operating expenses were severe weather conditions in the early part of the year and extensive repairs to locomotives. There was also an increase in claims for personal injuries of $5,000.

Ottawa and New York Ry.-New York and Ottawa Ry.—These two lines, which extend from Ottawa, Ont., to Tupper Lake, N.Y., the International boundary, being the end of each, are owned by the New York Central and Hudson River Rd. In order to bring about a simplification of accounting the N.Y.C. and H.R. Rd. has absorbed the N.Y. and O. Rd., which has ceased to exist. There will be no change in the management or operation of the Ottawa and New York Ry., the Canadian line, which crosses the International boundary by the bridge across the St. Lawrence River at Cornwall, Ont.

Quebec, Montreal and Southern Ry.—The Delaware and Hudson Co.'s report for 1912 shows an increase in Q.M. & S.R. operating revenue of $224,466.20 over 1911. The operating expenses increased $16,109.96, and the net income, independent of interest charges due to the parent company, were $156,378.98, an increase of $19,599.18.

Rutland Rd.—There has been deposited with the Secretary of State at Ottawa, an agreement between G. T. Jarvis, D. W. Pardee and E. L. Rossiter, vendors; the Guaranty Trust Co., of New York, as trustees, and the Rutland Rd., and also a lease to the Rutland Rd., the Guaranty Trust Co. being trustee, dated April 1. These documents refer to the Rutland and Noyan Ry., which the Rutland Rd. owns in Canada.

Temiscouata Ry.—Net earnings for Feb., $5,420. Aggregate net earnings for eight months ended Feb. 28, $39,982.

Grand Trunk Railway Betterments, Construction, Etc.

Southern New England Ry.—The President and other officers of the G.T.R. and the subsidiary lines interested had a conference at Providence, R.I., May 1, as to the situation of the Southern New England Ry. projects, but nothing was given out, or has since transpired as to the results of the conference.

Owen Sound-Meaford Line.—The question of the building of a line from Owen Sound to Meaford, Ont., is again being discussed. The people of Owen Sound have expressed their readiness to guarantee bonds for $200,000 if the G.T.R. will renew the offer made a few years ago. C. Eaton is reported to be in communication with the G.T.R. on the matter.

Holmdale Switch.—The Brantford, Ont., City Council decided, April 29, to repudiate the agreement it had made with the G.T.R. as to the construction of a switch into the Holmdale district.

Windsor Yards Electrification.—In connection with the prosecution of the G.T.R. at Windsor, Ont., for a violation of the smoke bylaw, May 6, the company's officials present said if the experiments being made to reduce the smoke did not prove satisfactory to the court, the company would consider the question of electrifying the yards between Windsor and Walkerville.

Locomotive House at Liskeard.—Press reports state that the company has purchased land in Liskeard, Ont., on which a locomotive house is to be built. The G.T.R. is operating over the Timiskaming and Northern Ontario Ry., using its own rolling stock, but has at present no locomotive house, except at Nipissing Jct., the point of junction. At Cochrane the T. and N.O. Ry. connects with the National Transcontinental Ry., which is to be operated by the Grand Trunk Pacific Ry. Liskeard would therefore form a divisional point between the two points of junction with the G.T.R. lines. (May, pg. 227.)

Canadian Northern Railway, Construction, Betterments, Etc.

Montreal-Ottawa-Port Arthur Line.—D. R. Hanna, Third Vice President, is reported to have stated in a recent interview that it is expected to have the track laid on this line by the fall, with the exception of the section between Ottawa and Capreol, Ont., on which there is considerable heavy construction.

The Montreal-Hawkesbury portion of the line is well advanced, the principal work necessary to its completion being the bridges at the Bank River. The Hawkesbury-Ottawa line is completed and in operation. In connection with this part of the line, the company asked the Dominion Parliament to confirm the sale to it of a portion of the property of the Carillon and Grenville Ry. As this sale is a matter of dispute with the Central Ry. of Canada, and is now before the courts, the application was withdrawn.

The line is under construction from Ottawa westwards to Capreol, where connection will be made with the Toronto-Sudbury line. Eastward from Port Arthur the line is well advanced to completion, and this will be completed to Ruel, the point to which the line has been built from Sudbury.

Canadian Northern Ontario Ry.—The last section of the Toronto-Ottawa line to be completed is that between the Jack River and Smiths Falls, Ont. The ballasting and final completion of the line will take several months.

Sir Donald Mann, Vice President, had an interview with the Mayor of Hamilton, May 12, in reference to the route of the line there, the location of passenger and freight terminals, and other matters.

We are officially advised that the company has a route surveyed for a line from north of Parry Sound to Callendar, Ont., but it is not likely that the line will be built this year. The proposed line leaves the Toronto-Sudbury line at mileage 170 north of Toronto, and runs northeasterly through the villages of Whitestone, Golden Valley, Restoule and Nipissing to a junction with the company's transcontinental line near Callendar. The standard of curvature will be six degrees, although there will be one or two which will be temporarily sharper. The line will cross the Whitestone, Maganatawan, Pickerel, Commanda Creek, and Wistiwasing streams. The crossings of the Maganatawan and South Rivers are the only crossings of any moment—the former comprising a deck span of 100 ft. and some 300 ft. of trestle approach, 45 ft. above the water; and the latter 300 ft. long and 25 ft. high. There is a very large quantity of timber to be brought out from the townships of Mackenzie, Mills and Patterson, the estimate is from 350 to 400 million feet, 100 million feet being pine. Aside from running through this area of timber, the line traverses for over half the distance a very fair agricultural country, which has been settled since the early days of the lumber industry.

Canadian Northern Ry.—The big fill on the cut off at Rainy Lake, Ont., which has been under construction for several years, and which has cost about $3,000,000, was completed May 12. The work was fully described in our issue of Aug., 1912.

Application is being made to the Board of Railway Commissioners for a recommendation to the Governor-in-Council to sanction the amalgamation of the C.N.R. and the C.N. Branch Lines Co.; under which charter a number of branch lines in Saskatchewan and Alberta have been built.

Canadian Northern Pacific Ry.—A special train conveying members of the British Columbia Government ran over the line from New Westminster to the end of steel at Yale, May 14. Reports of the progress of construction show that a distance of about 60 miles separates the grading gangs which are working east and west, and this gap is expected to be nearly closed up by the end of the year. The bridge work is also being rapidly pushed.

Construction on the branch from Kamloops to Vernon, etc., is, we are advised, suspended at present. There is said to be no intention on the part of the company to electrify it at present, as stated in the daily press. (May, pg. 227.)

Canadian Northern Railway Earnings, Etc.

Gross earnings, working expenses, net earnings, increases, or decreases, compared with those for 1911-12, from July 1, 1912:—

	Gross Earnings	Expenses	Net Earnings	Increase
July	$1,829,700	$1,335,100	$494,600	$133,000
Aug	1,745,800	1,375,000	270,800	56,100
Sept.	1,671,500	1,248,000	423,500	4,100
Oct.	2,351,200	1,645,900	705,300	24,000
Nov	2,509,700	1,631,900	877,800	212,600
Dec.	2,132,000	1,551,000	581,000	77,200
Jan	1,513,400	1,243,200	270,200	46,500
Feb.	1,398,700	1,130,200	268,500	30,900
Mar	1,685,900	1,254,400	431,500	4,700
	$16,837,900	$12,414,700	$4,423,200	$590,000
Incr	$2,429,000	$1,839,000	$590,000	

Mileage in operation during the foregoing period, 4,927, against 3,981 in the previous year.

Approximate earnings for April, $1,745,300, against $1,608,100 for April, 1912.

Canadian Pacific Railway Earnings, Etc.

Gross earnings, working expenses, net earnings, increases or decreases, compared with those for 1911-12, from July 1, 1912:—

	Gross Earnings	Expenses	Net Earnings	Increase
July	$12,052,398.58	$7,604,221.68	$4,448,176.90	$745,148.57
Aug	12,251,715.87	7,533,790.21	4,717,925.66	642,354.65
Sept	11,579,733.98	7,329,430.13	4,250,303.85	332,857.05
Oct	13,060,397.80	7,999,510.61	5,060,887.19	379,782.44
Nov	12,362,669.42	8,104,527.38	4,258,142.04	270,772.75
Dec	12,219,278.72	7,823,559.21	4,395,719.51	289,989.25
Jan	9,679,607.39	8,017,233.61	1,662,373.78	579,516.08
Feb	9,747,685.55	7,227,616.21	2,520,069.34	136,202.67
Mar	11,111,892.78	7,256,475.89	3,855,416.89	137,015.78
	$104,065,377.09	$68,896,364.93	$35,169,012.16	$3,513,639.04
Inc.	$14,719,003.33	$11,205,364.29	$3,513,639.04	

Approximate earnings for April, $11,476,000, against $11,028,000 for April, 1912.

Grand Trunk Railway Earnings, Etc.

The following figures show the earnings and expenses of the G.T.R., C.A.R., G.T. Western Ry. and D.G.H. & M.R. for four months ended Apr. 30, as compared with those for same period in 1912:—

	1913	1912	Increase
G.T.R.	$13,352,824	$11,500,188	$1,852,636
C.A.R.	740,411	639,027	101,384
G.T.W.R.	2,369,509	2,118,952	250,557
D G.H & M R	724,666	650,598	74,068
Totals	$17,187,410	$14,908,765	$2,278,645

Grand Trunk Pacific Railway Earnings.

The earnings of the Prairie Section and Lake Superior Branch for April, were $502,706, and the aggregate for four months ended Apr. 30, $1,670,011.

At the annual convention of the Master Car and Locomotive Painters' Association of U.S. and Canada, which will be held at Ottawa, Sept. 9 to 12, papers will be read on railway paint shop supplies, finishing steel car equipment, safety first as regards the paint shop, economy in locomotive painting, paint protection for steel equipment, silvering mirrors, removing old paint from equipment and brushes.

National Transcontinental Railway Construction.

The contractors for the building of the terminals for this railway at Quebec—M. P. and J. T. Davis—started work April 30 at Cap Rouge, and along the river frontage from the site of the Quebec Bridge to the Champlain Market. The steel work for the superstructure of the bridge is being delivered.

The locomotive shed to be built at O'Brien, Que., will have accommodation for 12 locomotives, and will have boiler and engine rooms attached. The foundation will be of concrete, and will be carried up to 3 ft. 11¼ in. above base of rail, the remainder of the wall to be of brick. The roof, of tar and gravel, will be supported on wooden columns, girders and beams, in the roundhouse part, and on steel trusses in the boiler and engine room part. The stalls will be 91 ft. long; the engine room will be 43 ft. by 48 ft. 2 in., and the boiler room 29 ft. 3 in. by 43 ft.

Owing to the small amount of work necessary to complete the line on Districts D and E, T. S. Armstrong, District Engineer, took over the work of the two districts May 1, the engagement of H. M. Balkam, of District D, being terminated April 30. (May, pg. 226.)

Grand Trunk Pacific Railway Construction.

J. E. Dalrymple, Vice President, returned to Montreal, May 13, after having completed a trip of inspection over the line. He stated that a regular passenger and freight service will be put in operation from Montreal and Toronto, to Edmonton, June 7. The train service will be to Sarnia, thence by the Northern Navigation Co.'s vessels to Fort William. From this point a train service will be operated over the G.T.P.R. Lake Superior branch to the junction with the National Transcontinental Ry,; thence over that line to Winnipeg, then over the G.T.P. Ry. to Edmonton. The section of the N.T.R. between Lake Superior Jct. and Cochrane, Ont., is expected to be open for traffic by the end of August, when a regular train service will be put on from Toronto to Cochrane, Ont., by G.T.R. to Nipissing Jct., thence over the Timiskaming and Northern Ontario Ry. to Cochrane. On the G.T.P.R. line west of Winnipeg, Mr. Dalrymple stated that construction is being pushed west of Tete Jaune Cache, by 10,000 men. There is 425 miles between the ends of steel being pushed west and that coming east from Prince Rupert. At the Pacific Coast terminal it is proposed to build an elevator with a capacity of 10,000,000 bush.

Collingwood Schreiber, C.M.G., Dominion Government General Consulting Engineer, is on a trip of inspection over the line. J. W. Stewart, of Foley, Welch and Stewart, left Vancouver, May 12, for Prince Rupert and Hazelton, B.C., where he had arranged to meet Mr. Schreiber.

Tracklaying has been completed on the Regina-International boundary branch, and connection has been made with the Great Northern Ry. branch from Neche, N.D.

The site of the N.W.M.P. barracks at Calgary, Alta., was taken over by the G.T.P. Ry. May 11, and work will be started on an early date on laying it out for terminal purposes. (May, pg. 226.)

The Minister of Railways and Canals has given notice of a resolution in the House of Commons, providing for an increase in the salary of the Chief Railway Commissioner, from $10,000 to $12,500 a year.

Canadian Pacific Railway Construction, Betterments, Etc.

Atlantic Division.—W. Downie, General [illegible] N.B., May [illegible] Mr. Downie is reported to have said the C.P.R., while taking over the line, did not [illegible] until after the completion of the Frederic[illegible] line.

Eastern Division.—Work was resumed May 1, on the second track, which has been [illegible] between Farnham and St. Johns is expected [illegible] of the year.

We are officially advised that it is not [illegible] this year on the extension of the Northern Colonization Ry. from Mount Laurier to a junction with the Ottawa, Northern and Western Ry. at Maniwaki, Que.

Ontario Division.—A [illegible] at North Toronto has been so far completed that a start was made in operating trains over it May 12. There is a great deal of filling yet to be done.

The second track being constructed from the end of the present track, west of Islington, to Guelph Jct., will be laid south of the present track, 13 ft. centre to centre. There will be no change of gradients or alignment. There will, however, be some sidings put in at different points, to facilitate traffic. The work is expected to be completed by the fall. Johnston and Girouard are the contractors, and a good deal of local labor is being employed. F. W. Morrison, Dixie, Ont.; G. Raynor, Streetsville, Ont., and W. Maharg, Guelph Jct., are the resident engineers in charge; with H. Wellwood as District Engineer, the whole work coming under C. W. P. Ramsay, Engineer of Construction, Montreal.

Pacific Division.—The second track work [illegible] ranged for in the way of reducing gradients. The new work will reduce the summit by 533 ft. The terminal, which will be built under the Selkirks, will be 28,000 ft. [illegible] sheds and 2,260 ft. of steel bridges. Tenders for the bridge are under consideration. Press reports state that the company propose to build a tunnel of considerable length in order to bring about the lowering of the gradients of the line through Kicking Horse Pass, but we are officially advised that nothing of the kind is contemplated at present.

Numerous tenders are reported to have been received May 10 for the following second track construction:—From Revelstoke, mileage 0 to 23, Shuswap subdivision; Kamloops East, mileage 104 to 129, Shuswap subdivision; Kamloops West, mileage 0 to 9, Thompson subdivision.

The double track [illegible] from Vancouver to Hammond, 24.1 miles, [illegible] expected to be completed between Hammond and Mission Jct., early in June, and from Mission Jct. to Ruby Creek, early in September. Ruby Creek is 81.1 miles east of Vancouver.

The C.P.R. has filed plans with the city of Vancouver showing a proposed tunnel under the city. The tunnel as proposed will be 4,000 ft. long, with practically level gradients. It is designed to carry a single track, and will enter under the city at the intersection of Thurlow St. with the C.P.R. south boundary of the front yard on Burrard Inlet. It will then run under Pender St. to the crossing of Hamilton St., curving south, and will end approximately at the intersection of Georgia St. with the C.P.R. boundary in the False Creek yards. It is expected to find the sandstone and hard pan, usually met with in foundation work in Vancouver, in the construction of the tunnel. (May, pg. 223.)

Railway Development

Projected Lines, Surveys, Construction, Betterments, Etc.

Atlin Ry.—Application is being made to the Dominion Parliament for the incorporation of a company with this title to build a railway from Atlin Lake, southerly to the Taku River on the International boundary, and a branch to Telsin Lake, B.C. Smith and Johnston, Ottawa, are solicitors for applicants.

Esquimalt and Nanaimo Ry.—The line into the Cowichan Lake [illegible] branches off from the Port Alberni line at Duncans, B.C., has been completed, and is expected to be opened for traffic early in June.

We are officially advised that the locomotive house, machine shops, boiler house [illegible] C.P.R. standard plans. The machinery for these shops will be transferred from the present shops at Wellington. The plans for the lay out of the yard and station buildings have not been completed. (May, pg. 219.)

Kettle Valley Lines.—[illegible] 3, when several hundred men left the camps. [illegible] railway labor is very scarce at present. [illegible] sections under construction by the end of the year.

An agreement has been made between the company and the Great Northern Ry. for the joint use of the section of the line from the summit of the Hope Mountains down the Coquihalla Valley to Hope, 57 miles. The K.V. Ry. will build the line, at an estimated cost of $75,000 a mile, and the G.N. Ry. will pay a percentage on this cost as an annual rental. On a large portion of this mileage the construction will be very heavy, as it will include 12 tunnels, one over half a mile long, and much rock cutting. Tenders will be asked for [illegible] (May, pg. 219.)

Lake Erie and Northern Ry.—The Board of Railway Commissioners has approved in [illegible] the city of Brantford, Ont., and the de[illegible] by the engineers.

[illegible] by the general contractors, Johnson Bros., Port Hope. Sub contracts have been let to Scriven and White for grading from Blue Lake towards Paris, and to Davis and Martin for grading from Paris towards [illegible] P. H. Secord and Sons with the concrete abutments for the bridge at Jubilee Terrace, Brantford. It is expected that work will be started at an early date south of Brantford towards Port Dover, but the principal efforts of the contractors are to be devoted to completing the Brantford [illegible]

North Ry.—Arrangements are reported to have been completed for placing four engineering parties in the field to locate the route for this projected railway. A. T. Tomlinson, Chief Engineer, will have charge of the work. No. 1 party will work from Mount Laurier, Que., northerly; No. 2 party will work southerly from the same point; No. 3 party will start from Lachute, Argenteuil county, and work north, while No. 4 party will work south from the Bell River crossing of the National Transcontinental Railway. F. H. Clergue, who represents the syndicate which owns the charter, is reported to have stated recently that it is proposed to start construction at four points, Montreal, north and south from the Bell River crossing of the National Transcontinental Railway, and south from James Bay. It is expected to send out a steamboat with a party of engineers and supplies to James Bay in July. The four survey parties already referred to will cover the first section of the line from Montreal to Bell River. This section of the line, a press report states, is expected to be completed at the same time as the National Transcontinental Railway, so as to give that line a direct connection with Montreal. (May, pg. 220.)

Pacific Great Eastern Ry.—Track laying was reported to have been started, April 28, at the point where the line starts off from the Howe Sound and Northern Ry. Grading camps extend northerly for about 20 miles from Newport, B.C., and a wagon road has been cut out for 20 miles, and is being extended to the summit of the coast range. Arrangements are reported to have been completed for the building of a wagon road southerly from Pemberton Meadows to the summit of the coast range, where it will connect with the road being built northerly. Supplies are being sent into the various grading camps on the section between Newport and Lillooet. Engineering parties started out, April 30, to make the final location for the line from Lillooet to Fort George, and the general contractor, P. Welch, is preparing to sublet this portion of the work.

Negotiations are still in progress for the right of way from North Vancouver to Newport, the starting point of the Howe Sound and Northern Ry., which has been incorporated with the P.G.E. Ry. If certain lands are sold to the company for the right of way the company has offered to start construction in June and to have the line completed to Point Atkinson within six months, operating an electric service thereon. A considerable number of property owners signified their willingness at a meeting held May 6 to accept the terms offered, and it was expected that a complete agreement would be reached by May 30.

The Provincial Minister of Railways has approved the company's plans for standard bridges on the line as follows: 60 ft. deck and through truss spans; 100 ft. through [illegible] 125 ft. through spans; 150 ft. through and deck spans. (April, pg. 169.)

Quebec and Saguenay Ry.—Press reports state that the financial affairs of this company have been adjusted, and that construction will be resumed at an early date. It is said the line will be completed to [illegible] the work between that point and Murray Bay [illegible] matter of future arrangement.

Transportation Appointments Throughout Canada.

The information under this head, which is almost entirely gathered from official sources, is compiled with the greatest care, so as to ensure absolute accuracy. Anyone who may notice any error in our announcements will confer a favor by advising us.

Allan Line Steamship Co.—C. A. LEWTHWAITE has been appointed Travelling Passenger Agent, vice J. F. Pratt. Headquarters, Winnipeg.

Canadian Freight Association.—R. G. McCRAW, heretofore Travelling Freight Agent, Minneapolis, St. Paul and Sault Ste. Marie Ry., Toronto, has been appointed Travelling Transit Inspector, C.F.A. Headquarters, Toronto.

Canadian Government Railways.—F. P GUTELIUS, M. Can. Soc. C.E., has been appointed General Manager, Canadian Government Railways, vice the Government Railways Managing Board, abolished. Office, Moncton, N.B. Full particulars of the change in management are given in this issue, on another page.

Canadian Northern Quebec Ry.—H. H. SMITH, heretofore chief clerk to General Manager, has been appointed Car Service Agent. Office, Moreau St. Station, Hochelaga, Montreal.

Canadian Northern Ry.—W. J. WHITESIDE, heretofore Advertising Agent, having been transferred to the Publicity Department, which is in charge of R. CROASDELL, the position of Advertising Agent has been abolished, and the advertising work has been placed under R. L. FAIRBAIRN, General Passenger Agent, Eastern Lines, Toronto.

ARTHUR PENNY, heretofore in the General Advertising Agent's office, G.T.R., Montreal, has been appointed on Mr. Fairbairn's staff.

A. E. KNIGHT, heretofore chief linen clerk, Sleeping, Dining and Parlor Car, Hotel and News Department, Winnipeg, has been appointed Platform Inspector, Sleeping and Dining Cars, vice A. H. Murphy, resigned. Headquarters, Winnipeg.

J. DONAHUE has been appointed chief linen clerk, Sleeping, Dining and Parlor Car, Hotel and News Department, Winnipeg, vice A. E. Knight, promoted.

C. N. JONES, heretofore storekeeper, Sleeping, Dining and Parlor Car, Hotel and News Department, Prince Albert, Sask., has been appointed Sleeping and Dining Car Agent at Saskatoon, Sask., vice C. Oliver, resigned.

A. PATRICK has been appointed storekeeper, Sleeping, Dining and Parlor Car, Hotel and News Department, Prince Albert, Sask., vice C. N. Jones, promoted.

W. C. TURNER has been appointed acting Trainmaster at North Battleford, Sask., vice F. W. Ross on sick leave.

A. L. JOHNSTON has been appointed Agent at Minneapolis, Minn. Office, 311 Nicollet Ave.

Canadian Pacific Ry.—H. C. GROUT, heretofore Assistant General Superintendent, Atlantic Division, St. John, N.B., has been appointed acting General Superintendent, while W. Downie is on leave of absence for a year. No appointment will be made as Assistant General Superintendent, at least for the present.

D. NESBITT, heretofore chief carpenter, Kingston and Pembroke Ry., Kingston, Ont., has been appointed Foreman of Bridges and Buildings, Kingston Subdivision, C.P.R., Kingston, Ont.

W. H. POLLEY, heretofore ticket agent, King Edward Hotel, Toronto, has been appointed Travelling Passenger Agent. Headquarters, Toronto.

F. H. HETHERINGTON has been appointed Locomotive Foreman at White River, Ont., vice —. Johnson.

A city ticket office has been opened at 404 Victoria Ave., Fort William, Ont., A. J. BOREHAM, City Passenger Agent.

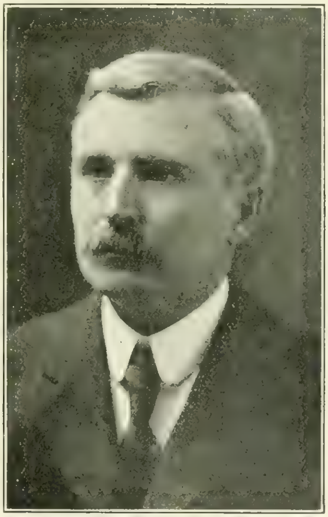
H. J. REED, heretofore Night Locomotive Foreman at Winnipeg, has been appointed Locomotive Foreman at Ignace, Ont., vice W. Bryce, transferred.

J. MORTON has been appointed Night Locomotive Foreman at Winnipeg, vice H. J. Reed, transferred.

V. G. MELSTED, heretofore Resident Engineer, Brandon, Man., has been appointed Engineer of Water Service, Winnipeg.

E. LANDORTH has been appointed Resident Engineer, Brandon, Man., vice V. G. Melsted, assigned to other duties.

R. ARMSTRONG, heretofore Superintendent, District 3, Saskatchewan Division, Saskatoon, has been appointed Superintendent, District 4, Manitoba Division, vice E. W. DuVal, transferred. Office, Souris.



R. Armstrong,
Superintendent, District 4, Manitoba Division, Canadian Pacific Railway.

E. W. DUVAL, heretofore Superintendent, District 4, Manitoba Division, Souris, has been appointed Superintendent, District 3, Saskatchewan Division, vice R. Armstrong, transferred. Office, Saskatoon.

G. BELL has been appointed Locomotive Foreman at Wilkie, Sask., temporarily.

F. W. ALEXANDER, A.M. Can. Soc. C.E., heretofore Assistant Division Engineer, Calgary, Alta., has been appointed Division Engineer, vice N. E. Brooks, promoted. Office, Calgary, Alta.

K. A. DUNPHY has been appointed Resident Engineer, District 2, Alberta Division, vice J. Robertson. Office, Calgary.

A city ticket office has been opened at 215 Eighth Avenue West, Calgary, Alta., in charge of F. J. HURKETT.

W. G. MACPHERSON has been appointed Locomotive Foreman at Alyth, Alta., vice R. S. Teague, transferred.

R. S. TEAGUE, heretofore Locomotive Foreman at Alyth, Alta., has been appointed Locomotive Foreman at West Calgary, Alta., vice W. J. Coleman, transferred.

C. H. SEWELL, heretofore yardman, has been appointed Yardmaster, Nelson Terminal, B.C., vice F. Young, resigned.

J. ARCHIBALD, heretofore Shop Foreman at Vancouver, B.C., has been appointed Locomotive Foreman at Coquitlam, B.C.

W. MORGAN, heretofore leading hand at Vancouver, has been appointed Car Foreman at Coquitlam, B.C.

A. STURROCK, heretofore Shop Foreman at Fort William, Ont., has been appointed Shop Foreman at Vancouver, B.C., vice J. Archibald, transferred.

C. J. BRASOR, heretofore Assistant Import Freight Agent, Chicago, Ill., has been appointed Agent, Foreign Freight Department, New York, vice L. D. Cole, resigned. Office, 1 Broadway.

J. J. MORTON, heretofore in the Import Freight Agent's office, Chicago, Ill., has been appointed acting Assistant Import Freight Agent there, vice C. J. Brasor, transferred to New York.

W. McLEOD has been appointed Assistant Chief of the Department of Investigation, Western Line, vice F. J. Andrews, assigned to other duties.

Grand Trunk Pacific Ry.—G. T. BELL, heretofore Assistant Passenger Traffic Manager, G.T.R., and G.T.P.R., has been appointed Passenger Traffic Manager, G.T.R. and G.T.P.R., vice W. E. Davis, deceased. Office, Montreal.

The following agents have been appointed:—Landis, Sask., A. G. Jamieson; Ebenezer, Sask., W. J. Pelland; Wabamun, Alta., L. A. Fadden; Edson, Alta., R. H. Christie; Pocohontas, Alta., B. B. Holland; Coalspur, Alta., W. L. Dobie.

Grand Trunk Ry.—G. T. BELL, heretofore Assistant Passenger Traffic Manager, G.T.R., and G.T.P.R., has been appointed Passenger Traffic Manager, G.T.R. and G.T.P.R., vice W. E. Davis, deceased. Office, Montreal.

H. WILLIAMS, Paymaster, Montreal, has been superannuated under the pension rules.

C. H. MASSIAH, heretofore in Treasurer's office, has been appointed Paymaster, vice H. Williams, superannuated. Office, Montreal.

W. M. TISDALE, heretofore of Woodstock, Ont., has been appointed Chief Special Agent, Eastern Lines, Montreal, vice James Hodge, transferred to Toronto.

V. G. SNELL, heretofore Soliciting Freight Agent, Montreal, has been appointed City Freight Agent there. This is a new position.

R. A. BECKER has been appointed Supervisor of Signals, Eastern Lines, with charge of interlocking plants, automatic signals, electric crossing bells, etc. Office, Montreal.

JAS. EDWARD, heretofore Commercial Agent, Moncton, N.B., has been appointed Division Freight Agent, Ottawa, Ont., vice A. D. Huff, resigned.

G. PEPALL, Assistant Foreign Freight Agent, Toronto, heretofore in charge of the export traffic only, west of Belleville, Ont., to the Detroit and St. Clair Rivers, has been given charge of the import freight traffic also.

E. R. THORNE, heretofore Soliciting Freight Agent, has been appointed City Freight Agent, Toronto.

F. R. CLARK, heretofore Travelling Freight Agent, Toronto, has been appointed Soliciting Import Agent there.

F. G. GOULD, heretofore Soliciting Freight Agent, Toronto, has been appointed Travelling Freight Agent there, vice F. R. Clark, transferred.

G. S. DONALDSON, heretofore rate clerk, has been appointed Soliciting Freight Agent, Toronto, vice F. G. Gould, promoted.

E. R. THORPE, heretofore Soliciting Freight Agent, Toronto, has been appoint-

[illegible]

[illegible]

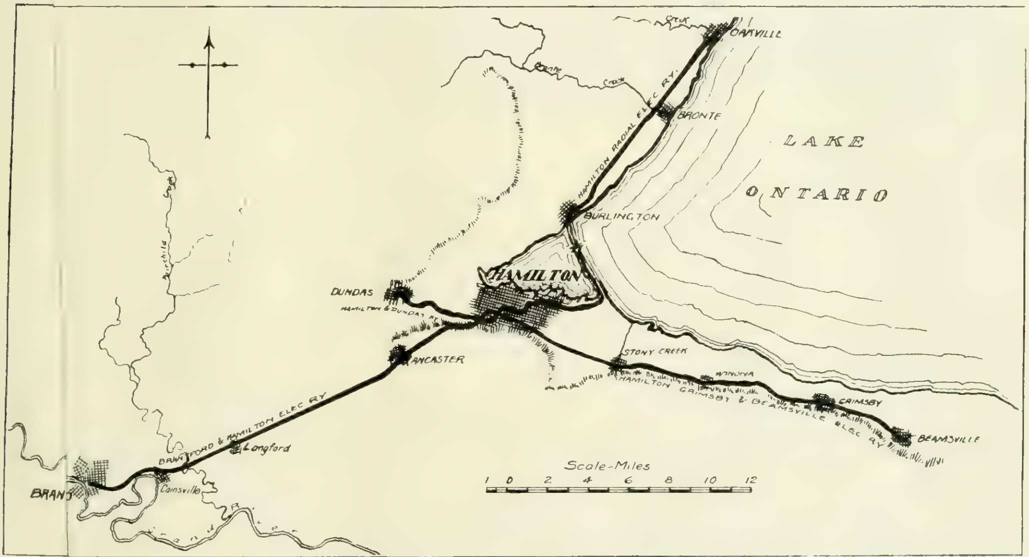
Trade and Supply Notes

[illegible]

Electric Railway Department.

The Dominion Power and Transmission Co.'s Railway System.

Tominion Power and Transmission Co. or controls the whole electric railwayation in and around Hamilton, Ont.e several companies operating electilway lines, and certain of the electower and transmission companies had.t 1900, been taken over by a holdcompany called the Hamilton ElecLight and Cataract Power Co. This any was expanded in its scope by the ibration of the Hamilton Cataract, Powght and Traction Co., under an Ontaarter, Feb. 5, 1903, the new company rbing all the interests of the otherpany with its several subsidiary compa



Radial Lines of the Dominion Power and Transmission Co.

The Dnion Power and Transmission Co. was rporated by Dominion charter, Jan. 22, 7, to absorb the Hamilton Cataract, wer, Light and Traction Co., a move ma necessary by the urgent demands fon increase in the financial capacity the latter company, which had become iequate to meet the expansion in the cony's business, and contemplated extenss. As four fifths of the old company's ock was taken over, the new company in every way a successor to the form one, only on a much larger scale. T electric railway and related companies en over from the Cataract Co. in this ger, included the Hamilton Radial Elric Ry. Co., Hamilton Street Ry. Co., Hilton and Dundas Street Ry. Co., Hamil Electric Light and Power Co., and the Loln Electric Light and Power Co. In adon, the company acquired the direct owneip of the Brantford and Hamilton Electi Ry. Co., and the Hamilton Terminal C both of which were then building, a the control of the Hamilton, Grimsby a Beamsville Electric Ry. Co., giving compe control of the electric railway situation in Hamilton and vicinity. The completion of the Hamilton terminal building shortly after the incorporation of the new company, enabled the several subsidiary companies to move their offices to this central point, and while the original companies are still retained in their initial form, the holding company acts as the administrative company for them all.

The Hamilton Street Ry. operates on all the electric railway lines in the city on which a purely local business is conducted, and is a unit apart from the radial lines, which, while operating over the lines of the street railway company in the centre of the city, have for the most part their own lines, acquired in the early days before the present amalgamation. The routing of the several city lines, of which there are six, is shown in the accompanying map of the city. The six lines are as follows:—G.T.R. and James South, James North and King West, King East and Barton, Wentworth St., Incline Ry., and York St. The G.T.R. and James South line, leaving the G.T.R. station, runs south on James St., west on Herkimer St., and around via King West to James St., and thence back to the station, a total round trip distance of 4¼ miles. The James North and King West line might be termed the reverse of the last mentioned route, following James St. south from the boat wharf, along King West, and around the loop via Herkimer St. to James and back to the wharf, a total distance of 5 miles. The King East and Barton line follows a U route, along King East from Sherman St. to James, and thence north to Barton St., travelling east to the other terminus at Ottawa St. The total round trip distance is 10½ miles, the longest route of any of the city car lines. The remaining three lines are stubs. The Incline Ry. line runs up to the foot of the mountain on James South, returning as far north as the crossover just north of King St., a total return distance of 1½ miles. From the same crossover, the Wentworth St. line runs along King East and up Wentworth St., the latter a single track line to the foot of the east end incline railway, a return distance of 3¼ miles. The remaining line is that on York St., which crosses over at the corner of James St., running out York to Dundurn Park, a round trip distance of 2¾ miles. These are all the purely local lines owned by the street railway company, but over the radial line the King East and Barton line operates alternate cars from the point where the radial line crosses Barton St., out through the industrial area, to the large plants of the newer industries that have been established in Hamilton of recent years. This line is called the Deering section of the King East and Barton line, on account of the fact that the Deering plant of the International Harvester Co. is the largest plant served on the division.

The traffic on the street railway lines is particularly heavy, as Hamilton is so laid out along the foot of the mountain as to make the distances from east to west considerable. From the fact that the city depends for the most part on its industries, the street car traffic fluctuates from very light during factory hours, to heavy rushes through short periods before and after factory hours. The heaviest rush hour traffic is from the Deering section of the King East and Barton line, where the bulk of the factories are located. For this rush hour service on this section, it is possible for the company to use the poorest of its equipment, for the bulk of the traffic transported from that section is of the [illegible] During 1912 [illegible] street railway lines moved a total of 14,100,000 people. To acommodate this [illegible] lines consists of 36 cars, which is increased [illegible]. In addition there are held in reserve some 25 for heavy rush hour service, particularly over the Deering line.

[illegible] of 95 passenger cars, 44 of which are double truck. The latest types of both single and double truck cars used on the lines are [illegible] illustrations. The equipment has been considerably in[illegible] by the addition of quite a number of these two types of cars, which are of the very latest type of construction. The additional equipment consists of three sweepers and a sand car.

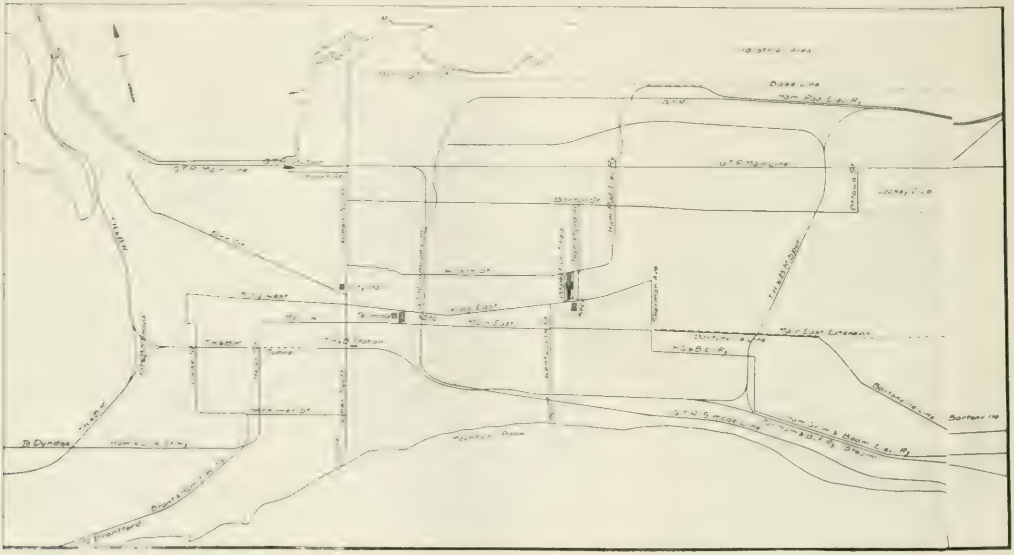
For several years, no extensions have been made to the city system, as the lines as then existing covered such a wide territory that additional mileage would not have proved profitable. This year, several [illegible] is at present under way. This latter, the main one of the additions, is to be a double track line from James North, near the waterfront, along Burlington St. and the base line, paralleling the radial line in the industrial area to Kenilworth Ave., the terminus of the extension. It is also proposed to extend the Barton St. line from its present terminus at Ottawa St., along in front of the Jockey Club, also to Kenilworth Ave., and similarly with the King [illegible] Ave., along Main East to Kenilworth Ave. [illegible] by a connecting line from the base line [illegible] in the sections of the city that are growing most rapidly, the development in the [illegible]

[illegible] across the street, on the north side, is the [illegible] housing summer cars in winter, and vice versa. All the daily movements are from the other barn. The inspection shed is shown herewith. It is a brick building, with reinforced concrete column and roof construction, 160 ft. long, and 4 tracks wide. Along the east side are separate rooms, a central one containing the heating apparatus, consisting essentially of a 60 h.p. boiler for heating the shop by the vacuum system. The four through tracks have pits in the shop section, the east pit having 4 drops in addition, for the removal of motors and wheels. Covered storage space for cars in daily service is not deemed necessary. To the rear of the inspection shed, the 4 tracks extend to Wilson St., this space to the rear being used for storage purposes. In addition to these four through tracks, there are three additional ones on the west side, and one on the east side, one on each side being a through track. The side rooms of the inspection building contain carmen's room and local repair room for light running repairs. A small building to the west of the main building contains the fender making and repairing department. From King East, the cars enter the shed and yard from a single [illegible] track from King East, and can be drawn from the storage yard along the single service track along Wilson Ave. to the rear of the yard. This line leads along to the street railway operating office at the corner of James North and Gore St. There is also another single track service line from the rear of the yards on Sanford Ave. to Barton St., which serves as a cut off in running the cars into the industrial area from the car sheds in the rush hours, and means a saving of considerable dead mileage.

The repair shop, across from the inspection shed, is an old building, containing two through tracks from King East, terminating in a turntable at the rear, over which the cars can be turned out into Sanford St. or into the paint shed, which [illegible] to the rear and west of the main shop. The main shop has two pits [illegible] the two through tracks. Along the side of this erecting portion of the shop is the machine shop. Over the [illegible] the machine shop is the winding ro[illegible] reached by an elevator, where repairs to armature and field coils are atten[illegible]. On the other side of the erecting [illegible] over the top, is the woodworking [illegible]ment. While the whole shop is very [illegible]gested, and the equipment small, the [illegible] turned out is unusual. In these shops many of the older cars have been co[illegible]ly remodelled, and heavy repairs are [illegible]tantly being put through. A complete new car has even been constructed. [illegible]resent understanding is that the shop [illegible] be in service for any great length [illegible] ne for its present work, as a complete new shop is projected, the details of whi[illegible] not as yet been developed.

The radial lines emanating [illegible] Hamilton are four in number, cover[illegible] principal districts around the city. [illegible]ach of the separate companies maint[illegible] its own separate existence financially, in all other respects there is no disti[illegible] among the several lines operated by Dominion Power and Transmission [illegible] Two of the companies operate und[illegible] Dominion charters, and the other two [illegible] Ontario charters, which introduces a [illegible]uliar element into the operation of [illegible] lines, as each pair comes under diff[illegible] railway jurisdiction.

For the purposes of furthe[illegible] the usefulness of the consolidation the different lines, a central terminal [illegible]ation was built immediately after the [illegible]mation of the new company, owned an[illegible]perated by the Hamilton Terminal Co., subsidiary company, in which are loc[illegible] all the officials of the main comp[illegible], and the offices for the lighting and p[illegible]er business conducted by the company i[illegible] conjunction with its railway interests. [illegible] is a large four story and basement stru[illegible]re of considerable architectural beauty [illegible]nd was described in Canadian Railwa[illegible]nd Marine World at the time of constru[illegible]on. It occupies a central position on K[illegible] East, not far from the Gore at the [illegible]er of King and James. On the east si[illegible] of the terminal building are four tra[illegible] extending through from King East to [illegible]n East, the



Street, Radial, and Steam Railway Lines in Hamilton.

[illegible] street to the south. This latter street is the main artery for general entrance of the lines branching off from the single track line [illegible]. The main floor of the terminal building contains a commodious waiting room with ticket office and other facilities such as would be found in any well appointed steam railway station. The cars for the several companies run into the tracks at the rear of the station. The company owns the Temple Theatre, a vaudeville house to one side of the terminal station, which is a very productive traffic drawing project.

All the several lines house their equipment in the yards mentioned earlier, where all the repairs to the cars are made as well [illegible]

Typical Double Truck City Car.

Typical Single Truck City Car.

Each line owns a certain proportion of the radial rolling stock, although the cars owned by the different companies may not be operating on the lines of that particular company, the separation of the cars being merely for convenience in car accounting, the distribution of the cars over the lines following the exigencies of the service.

The Hamilton Terminal Co. owns 6 passenger cars, 1 freight car, and 1 combination snow plough and freight car. These cars are used as a surplus supply of rolling stock to relieve the line requiring the additional equipment for any particular emergency. All the passenger cars owned by the several radial lines, as well as the terminal company, are of the heavy interurban type, double truck, and of a very solid construction throughout. Several different designs are in service, but in general details they are very much alike. They are all equipped with straight air. The freight motor cars are all equipped with the automatic air brake system for service in handling steam line freight cars in trains over the system and in interchange work.

THE HAMILTON AND DUNDAS Street Ry. is one of the principal lines running out of Hamilton. It has an Ontario charter. On leaving the terminal station it follows Main St. to James South, and thence along Herkimer St. to the country highways, which it follows into Dundas. The traffic handled is almost exclusively passenger, and, in consequence, the equipment only includes three double truck passenger cars. The total passenger traffic last year was 707,500. A large number of people employed in Hamilton live in Dundas, giving heavy morning and evening loads. Apart from this heavy through traffic, there is a great deal of local traffic picked up, as the line passes through suburbs of the city not as closely served by the city lines. The H. & D. line also passes through a growing settlement between the two termini, called the West Hamilton survey, which also augments the local traffic. The line runs 18 cars a day each way. The total length of the line between termini is 7 miles, with 5 principal intermediate stops. As there are no important self contained settlements intervening, no stations along the line are required, but at the Dundas end there is a complete station with agent and some station facilities. The line follows the highway throughout its full length.

THE HAMILTON RADIAL ELECTRIC Ry. covers the lake shore territory [illegible] of the earliest [illegible] lines [illegible] operating under a Dominion charter. For a number of years it was operated as far as Burlington, and about 1905 was extended to Oakville. The rolling stock consists of 7 double truck passenger cars and a freight car. The traffic over this line is almost exclusively passenger, particularly in the summer when Burlington Beach is in full swing. Leaving the terminal station and travelling east along King St., the cars turn north on Sanford Ave. at the car shops, and finally on their own right of way to the base line on a double track line. It is proposed in connection with the new local line now under construction along the base line that there be a central boulevard along the street on which there will be four tracks, two each for local and radial lines. Leaving the city limits on the base line, the line continues on a double track, following its own right of way as far as the southern approach to the Beach, when it again goes on the highway. Passing the full length of the Beach, it crosses the canal on the highway bridge, and then on to Burlington, this latter portion from the bridge being single track line, as that is the end of the heavy summer beach traffic. From Burlington, the line follows its own right of way through a prosperous farming community, and through the village of Bronte to Oakville, the eastern terminus. The single track portion of the line at the time of construction was graded all the way, for the subsequent addition of a second track. Up to the present, the traffic has not warranted this addition. Between termini, there are 9 main stops, with numerous intermediate flag stops. The Oakville terminal is a complete station, with agent.

The total length of the line is 21½ miles, over which there are operated during the winter 18 cars a day each way. During the summer the heavy beach traffic creates [illegible] addition of a special [illegible] traffic is carried. [illegible] sets of 4 and 5, running on very [illegible] along the line.

THE HAMILTON, GRIMSBY AND BEAMSVILLE ELECTRIC Ry. [illegible] It extends from Hamilton to Beamsville, 22 miles, through the populous fruit district of the Niagara peninsula. This territory includes the towns of Stoney Creek, Winona and Grimsby, as well as the summer resort at Grimsby Beach, the line touching all these points. The original line was built before the day of separate rights of way for electric lines, and in consequence operates along the highways. The speeds of operation possible on the other lines is not possible here, as the highways along which the line passes contain many curves and sharp turns.

Inspection Shed and Storage Yard.

The company owns 6 passenger and 5 freight cars, and during the past year carried 687,500 passengers. But it is not for the passenger traffic alone that this line is particularly valuable, great as it is, but more especially for the heavy freight traffic that is developed. The fruit traffic during the summer, from June on through into the winter, is particularly heavy. In addition, in the early spring, the shipments of nursery stock from off the line are considerable, and the volume of traffic is such as to keep the company's freight motors in constant service.

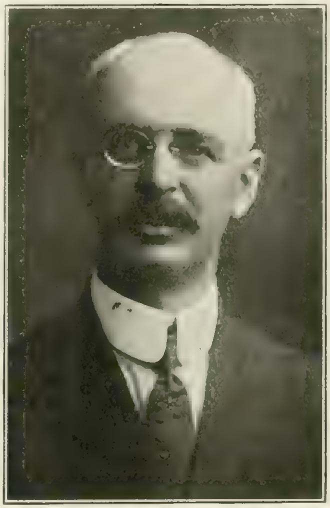
This line has a direct connection with the C.P.R. and T.H. & B.R. at Kinnear, in East Hamilton. The principal outside connection for freight originating on the line is with the G.T.R. at Winona, where the latter company has put in comparatively extensive yards for the handling of the interchange freight.

Between the two termini there are 12 passenger stops and [illegible] along the line. Stoney Creek, Winona, Grimsby and Beamsville, there are agents. There are numerous intermediate flag points. 18 cars per day are operated each way, exclusive of the excursion traffic to Grimsby Beach, a distance of 20 miles from Hamilton, which is heavy in the summer.

THE BRANTFORD AND HAMILTON Electric Ry. is the newest of the radial lines running out of Hamilton, extending from that city to Brantford, 23 miles. This line leaves Hamilton from the terminal station, going along Main and Hess Sts., and out of the city on its own right of way, which it follows to Brantford, going into that city along the canal in the lower part of the town. The route followed is very hilly, the height of land between the two towns having to be crossed. No places of importance, outside of Ancaster, where an agent is stationed, are passed through. The development along this line has been rather marked, considering the newness of the project. On account of the frequency of the service, a large through traffic between the cities has been developed. This, in addition to the local traffic picked up along the line for both cities, brought the number of passengers carried up to 490,500 last year. The fact that both ends of the line are in prospering cities has been a most important factor in booming the road But little freight traffic is handled.

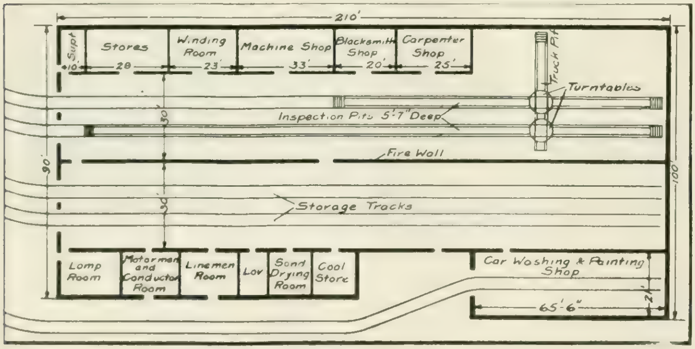
Power for all the companies lines, and for distribution in its capacity of power transmitter, is generated at DeCew Falls, near St. Catharines. This plant has a very high head, and with large storage areas under the company's control, a plant of very high efficiency has been developed. Its total capacity is 43,600 k.w., produced in 10 generators, ranging in capacity from 2,500 to 4,600 k.w. each, with 500 k.w. exciter unit. Power is developed at 2,400 volts, 3 phase, and 66 cycles. The original installation use 66 cycles, an odd frequency for modern installations, and in consequence, subsequent installations have had to be the same. Sixty cycle equipment can be used on the system by speeding up.

At the power plant, the pressure is stepped up to 40,000 volts, for transmission to the different points on the line, and for power purposes, the company having about 200 miles of transmission lines. Only the lines for railway purposes will be considered. Between DeCew Falls and Hamilton, there are three distinct transmission lines, two on the height of land, and the third along the lower land. These all come to an open air switching station in Hamilton. At different points along the line the pressure is stepped down and changed to d.c. in motor generator sets. In Hamilton, there are three substations, two [illegible] station at each [illegible] equipment, a 2000 k.w. d.c. set. On the Oakville line, there is a 450 k.w. d.c. set at Burlington, and a 250 k.w. d.c. set at Oakville. On the Brantford line is a 600 k.w. d.c. set at Brantford, and two intermediate sets of similar capacity en route. The Beamsville line has a 600 k.w. d.c. set at Grimsby, and a 300 k.w. d.c. set at Stoney Creek. There are other stations at points along the line for the supply of power for local municipalities and industries.


E. P. Coleman.
General Manager Dominion Power and Transmission Co., Ltd.

The officials of the company are as follows:—J. R. Moodie, President; W. C. Hawkins, Managing Director; E. P. Coleman, General Manager; G. E. Waller, Gen. Supt. of Railways; W. G. Angus, Gen. Supt. of Light and Power; D. N. Miller, Supt. Street Ry.; F. B. Griffith, Superintendent Interurban Railway Division and Claims Agent; C. K. Green, Superintendent of Construction; J. B. Griffith, Purchasing Agent; and J. O. Binkley, Shop Superintendent.

The switchboard which the Bell Telephone Co. recently installed in the tower of the new C.P.R. Windsor St. Station, Montreal, has a capacity for 1,200 lines.



London and Lake Erie Railway and Transportation Co.'s Car Shed and Shop.

New Car Shed and Shop for London and Lake Erie Ry. and Transportation Co.

A plan of this company's new car shed and shop at St. Thomas, Ont., mentioned some time ago in these columns, is shown in the accompanying illustration. The line operates between London and Port Stanley, a resort on Lake Erie, a distance of 22 miles, passing through St. Thomas, 14 miles from London. The principal normal service is between these two cities, but in the summer a heavy traffic is carried from both these cities to the lake. The method of conducting this traffic by the aid of double truck trailers was described in these columns in Oct., 1912. For general operation, St. Thomas is the most central point, and the shops and transformer station have been located there since the construction of the line.

The shed shown has recently been completed. It is a brick structure 210 by 90 ft., with four full length tracks, giving sufficient accommodation for the company's full rolling stock equipment of sixteen 50 ft. cars. This, however, is never required, as several are always located at the London terminal.

The main part of the building is divided into two sections by a central fire wall. The east, or repair shop section, contains two pits, one the full length of the building, and the other half the length, running forward from the rear of the building, both 5 ft. 7 ins. deep, a normal pit depth. Near the rear of the shop is a cross pit, on which the trucks for cars over the inspection pits may be removed by means of intersecting turntables. The rear section of the shop adjoining this cross pit is for truck repairs.

The several shops are located in rooms along the east wall, and comprise a carpenter, blacksmith, machine and winding shop. In front of these is the store room, with the superintendent's office at the front end, opening both to the shop and street. The shop is equipped with overhead travelling crane.

The west portion of the building contains two plain storage tracks, separated from the repair shop by the fire wall. Along the west wall, outside this section, are the auxiliary rooms, in a long leanto building.

A car washing and painting shop is provided to the rear of these rooms, entered from the outside, and completely separated from the main building by a fire wall, a necessary precaution for a paint shop. This shop is 65½ ft. long, and will conveniently accommodate one car.

The shops are located on the south side of Talbot St., the main street of St. Thomas, at the west end of the city, at the point where the line leaves the city streets northbound on its own right of way. The new transformer station is located alongside to the west. This latter building also contains the local ticket office and waiting room. To the rear is the company's local freight shed.

The Illinois Traction Co., an electric traction system, doing steam railway work, under a steam railway charter, carried 40,000 passengers during the past year in its electric sleeping cars, and has ordered new cars of this type to meet the demands of an increased traffic.

The Sandwich, Windsor and Amherstburg Ry. gave an increase to its conductors and motormen on May 1. The old wages were from 20 to 22½c. an hour, the new ones are from 23c to 25c. The men will receive an increase of ½c. an hour every 6 months until they reach the maximum of 25 cents.

British Columbia Electric Ry. Construction, Betterments, Etc.

The company has authorized plans for the erection of three car barns, these being extensions of its present buildings of this class in Vancouver, New Westminster and North Vancouver. The Vancouver car barns will be 400 ft. by 52 ft., to accommodate 40 cars on four tracks. The location is along the Lulu Island Ry. line, and the barn will serve both its interurban system and several branches of the Vancouver city lines. Tracks will be laid from the Kitsilano line, and also from the 4th Avenue line, entering the barns from opposite sides. The building will have a concrete foundation and will be built of wooden frame covered with corrugated iron. At present a small barn is located at the point, which is equipped with shops for emergency repairs. The plans call for a duplication of the new barn on a location immediately to the east in the near future. The new barns at New Westminster will be on 12th Street, and will be 240 by 104 ft. Eight tracks will be provided into these barns, which will accommodate the cars of the New Westminster city line and the interurban branches of the company's service. This structure will also have a concrete foundation, with building of corrugated iron. The North Vancouver barn will have a concrete foundation and steel frame, covered with corrugated iron. It will not be as large as the Vancouver or New Westminster barns, but will amply provide for the accommodation of the North Vancouver cars for some time to come.

J. R. Freeman, the engineer who is representing the Dominion Government in connection with the erection of the great dam at the outlet of Lake Coquitlam by the B. C. Electric Ry. Co., recently made an inspection of the work and addressed a public meeting at New Westminster. Press reports quote him as saying that G. R. G. Conway, Chief Engineer, B. C. E. Ry. Co., had co-operated with him concerning the construction of the dam in every possible way and, as a result, it will be one of the safest in the world. The water supply of New Westminster is taken from Lake Coquitlam, and Mr. Freeman said that the provisions made by the company to preserve the purity of this supply entailed an expenditure of nearly $1,000,000, this covering clearing about the lake, erection of new water works intake, etc. The dam will probably be completed in June, this being in advance of expectations. It will be 98 ft. high and 600 ft. wide at the base, and 850 ft. long and 40 ft. wide on the crest. In the construction 1,055,000 cu. yds. of material will be handled. The storage capacity will be 7,404,000,000 cu. ft., giving a reserve supply during the dry season of over 53,700,000 k.w.h. of electric energy.

The company has offered to construct a four mile line across West Vancouver Municipality, as an extension of the North Vancouver lines. West Vancouver was recently created as a separate district, and the company has rights in the section by reason of a franchise covering the old municipality at North Vancouver. As West Vancouver is but sparsely settled, the offer to build the line requires that a guarantee be given as to operating expenses other than interest on invested capital. The annual cost of operating an hourly service over the line is estimated at $10,000 a year. The question is under negotiation between the company and the municipal authorities.

The electors of Burnaby Municipality recently granted the franchise covering tram transportation for 36½ years, the vote being 743 for and 290 against. This gives a good majority over the required three-fifths. The principal conditions of the franchise are that the company shall build a line of two-miles on Hastings St. East, this being an extension of its Vancouver line. Another line one mile long, is to be built on the North Road, as soon as arrangements are made for the high level bridge over the Brunette River, this line being an extension of the New Westminster lines.

The company has decided to build a large repair shop on D.L. 118, Burnaby Municipality, just outside the city of Vancouver. Westinghouse, Church, Kerr and Co. have been engaged as consulting engineers for this plant and their staff is preparing plans. It is the company's intention to make these shops up to date in every particular, the idea being that this plant shall do all the heavier repair work for all lines operating on the southern mainland of British Columbia. The shops will be called the Horne-Payne repair shops, in honor of the Chairman of the Board of Directors, R. M. Horne-Payne, of London, Eng.

Wages on Regina Municipal Railway.

The Regina Municipal Railway has recently advanced the pay of conductors and motormen, a comparison of the old and new rates per hour being given below:

	Old.	New.
First 6 months	25c	27½c
Second 6 months	28c	30c
Second year	30c	35c
Third year and thereafter ..	32c	37½c

The above is on a basis of 10 hours per day. Men without experience are not paid until proficient.

Proposed Electric Ry. for Medicine Hat.

The City Council of Medicine Hat, Alta., has entered into a preliminary agreement with the Montreal Engineering Co., for the building of an electric railway in the city, and will submit a bylaw approving of the same to a vote of the ratepayers. The company is given an exclusive franchise for 20 years within the present city boundaries, or any extended boundaries. Construction is to be started within three months, and three miles of line are to be put in operation within nine months; an additional three miles within 12 months, and a further three miles within 20 months after the final signing of the agreement. The location of these nine miles is to be fixed by the council, and further extensions are to be located as the population warrants. The company is to pay taxes on lands used for its purposes until the population reaches 40,000; after which it is to pay taxes and 5% of its gross earnings until the city has a population of 100,000, when 10% of the gross earnings in addition to taxes is to become payable. The city has full power over the streets on which the lines are to be built, and is to decide the style of construction, and to control the schedule on which the cars are to be operated. The city may take over the franchise at the expiration of the 20 years, at valuation plus 15%. This price is not to include land, or anything for the franchise. The company is to accept the city's 5% bonds in payment. If the city does not take over the line at the end of 20 years the franchise is to be extended for five years, at the end of which time the city may take over the line at valuation. The company has the right to transfer the present agreement to a company to be incorporated under the name of the Medicine Hat Electric Ry. Co., Ltd., or to any other [illegible] company [illegible] with the consent of the city. The route of the lines is outlined in the agreement. Starting from the City Hall, the lines will reach the exhibition grounds, the [illegible] Cement Co.'s plant, and the Maple Leaf Milling Co.'s plant. The city is to supply current [illegible] cents per 1,000 ft. [illegible] cent per k.w. hour, for the operation of the cars. (Dec., 1912, pg. 622.)

Toronto and York Radial Railway Legislation.

The Ontario Legislature, at its recent session, passed an Act respecting the T. & Y. R. Ry. Co., giving it the power to lay a second track on a portion of Yonge St., Toronto, to build lines to connect its present Toronto termini and to operate its Metropolitan Division from Toronto to Lake Simcoe on Sundays, the latter right having previously been confined to its Scarboro and Mimico Divisions. The principal provisions are as follows:—

The company may, subject to the provisions of The Municipal Franchises Act, construct, equip and maintain double tracks upon Yonge St., in the city of Toronto, from the point where the company's rails leave Yonge St., near Woodlawn Ave., to the northerly limits of the city, and may operate upon the double tracks, subject to an agreement to be entered into with the city.

The Ontario Statutes, 1898, chap. 66, sec. 21, sub. sec. 16, which provided that the issue of bonds, debentures or other securities authorized should not exceed $20,000 for each mile of street railway track constructed or under contract for construction, has been amended by limiting the issue of bonds, etc., to $30,000 for each mile of single railway track.

The company may operate its cars upon its Metropolitan Division, or upon any part thereof, upon Sunday for the carrying of passengers only, except as provided for in subsec. 2, sec. 136, chap. 209, Revised Statutes of Ontario, 1897, subject to regulations to be imposed by the Ontario Railway and Municipal Board. The subsection referred to allows cars to be run into the city on Sundays up to 10 a.m., for the transportation of milk, and out of the city after 5 p.m.

The company may, subject to the provisions of The Municipal Franchises Act, survey, construct, equip and maintain railways, extensions and branches between and to connect the present Toronto termini of its Scarboro, its Metropolitan and its Mimico Divisions, either upon, across, over or under such highways within the city of Toronto as the city may agree to, and upon such highways as may be agreed upon by the other municipalities having the respective control thereof, and the company, or upon private right of way, or upon both such highways and such private right of way.

The company's extensions and branches authorized by that and previous Acts are to be commenced within two years and completed within five years of the passing of the Act.

L. A. Rivet, K.C., has been nominated by the Attorney General of Quebec, to oppose the contentions of the Montreal Tramways Co. before the Court of Appeals. These proceedings involve the jurisdiction of the Public Utilities Commission to intervene in the matters in regard to which the M. T. Co., and the Montreal City Council differ.

Electric Railway Projects, Construction, Betterments, Etc.

Brandon Municipal Ry.—The first car was [illegible] May [illegible]

British Columbia Electric Ry.—The site [illegible] terminal facilities at the corner of Pandora Ave. and Douglas St., Victoria. The tracks to connect the different city lines with the terminals are being laid. (May, pg. 235.)

Additional information will be found [illegible] Ry. Co. [illegible]

Buffalo and Fort Erie Ferry and Ry. Co.—The Ontario Legislature has authorized the company to increase its capital stock, first mortgage and refunding bonds, for the purpose of electrifying the present line between Fort Erie Ferry and Fort Erie Beach, Ont. It is reported that the line will be extended at an early date to Bridgeport and Port Colborne. (April, pg. 185.)

Burrard-Westminster Boundary Ry. and Navigation Co.—We are officially advised that it is the intention of the British [illegible] an expenditure of $200,000 on the preliminary work on the projected bridge across the Pitt River at Coquitlam this year. This bridge is to be built in connection with a railway from Vancouver to Mission City. The estimated total cost of the bridge is $500,000. The line in connection with which the bridge is to be built is a section of the [illegible] by the B.-W.B. Ry. and Navigation Co., which is owned by the Western Canada Power Co. [illegible] of the W. C. P. Co. was held in Ottawa, April 28. Following are the officers and directors for the cur-[illegible] President, [illegible]; Vice President, T. J. Drummond; other directors:—A. R. Doble, W. McNeill, C. [illegible] A. H. B. [illegible], R. F. Hayward, D. F. Hicks; Secretary-Treasurer, O. B. McCallum; Assistant Secretary-Treasurer, C. H. [illegible]. The company is supplying 40,000 h.p. of current to the British Columbia Electric Ry., and has contracts for the supply of 65,000 h.p. The company [illegible] (April, pg. 185.)

The Canadian Resources Development Co., which owns a considerable area of property in the vicinity of Port Arthur, Ont., has, for the purpose of opening it up, built an electric railway, 1.5 miles, from Fort William Road, westerly along Central Ave., to the golf links road. The company has one double end car on the line, 101 B. 2 Westinghouse motor. W. W. Lock, Port Arthur, [illegible]

Cape Breton Electric Co.—At a special meeting of the Sydney, N.S., City Council, May 5, it was decided to permit the building of some additional lines in the vicinity of the car barns, and a siding on Prince St., on condition that an improved service be given to the pier and that material be [illegible] the engineer. The Council urged the com- [illegible]

Dominion Power and Transmission Co.—Ex-Mayor Patterson of Galt, Ont., is re- [illegible] Dominion Power and Transmission Co., for the statement that construc- [illegible] electric railway line to connect Hamilton [illegible] off from the company's Brantford and Hamilton Ry., and is expected to run via Lynden and Troy to a point west of Sheffield, and then paralled to the Stone Road, entering Galt at East Main St., with the idea of [illegible] a union terminal with the Lake Erie & Northern Ry. (Jan., pg. 30.)

Dunnville, Wellandport and Beamsville Electric Ry.—The Dunnville, Ont., Town Council has granted the company an extension of a year within which to build its line in that town. The grading of the line between Dunnville and St. Anns is nearly completed, the bridges are built, and ties have been laid for some distance. The line will connect at St. Anns with the Toronto, Hamilton and Buffalo Ry., and it is expected to have this section in operation by the fall. A bylaw granting the company a franchise for a system of lines in the town has been prepared and will be submitted to the ratepayers at an early date. J. A. Ross, Wellandport, Ont., is President, and M. R. Campbell, Wellandport, is Secretary. (Oct., 1912, pg. 520.)

Forest Hill Electric Ry.—The Ontario Legislature has incorporated a company with this title to build the lines described on pg. 141 of our March issue. (April, pg. 185.)

The Frontier Electric Ry. announces that work will be begun shortly on its line to connect Niagara Falls, Buffalo, Tonawanda and North Tonawanda, N.Y.

Guelph Radial Ry.—Press reports state that the Guelph, Ont., City Council will relay 3,000 ft. of track with 80 lb. rails during the summer. (Mar., pg. 141.)

Hamilton Incline Ry.—The plans for the proposed new incline railway from Wentworth St., Hamilton, Ont., to the top of the Mountain were discussed by the Board of Control, May 8, but no decision was reached. The company is ready to start construction as soon as the plans are approved by the City Council. G. F. Webb, Hamilton, is interested. (April, pg. 185.)

Hamilton Mountain Electric Ry.—The Ontario Legislature has incorporated a company with this title to build a line from the Horning Mountain west to Mount Albion. (April, pg. 185.)

Hamilton St. Ry.—Grading is in progress on the base line east of Irondale, Hamilton, Ont., for the extension of the street railway. This part of the work is being done by the City Council. It is expected to have the extension from Kenilworth Ave. to Irondale open for traffic early in July. (April, pg. 185.)

Lethbridge Municipal Ry.—The Lethbridge, Alta., City Council is asking the ratepayers for authority to raise $31,000 by debentures for the purpose of building some extensions in North Lethbridge. (May, pg. 235.)

London St. Ry.—We are officially advised that the company is not considering the installation of any new engines or generators, as stated in recent press reports. The company, however, has under consideration the question of installing some new boilers, but no decision has been reached. (Nov., 1912, pg. 573.)

Montreal and Southern Counties Ry.—[illegible] of the Montreal City Council, which has been investigating the com- [illegible] recommended the Council not to grant the application. (May, pg. 235.)

Montreal Tramways Co.—We are officially advised that appropriations amounting to about $1,000,000 for track and electric construction and renewals have been passed. The question of a large expenditure for increased power is under consideration.

At a sitting of the Quebec Utilities Commission, April 30, it was decided to hold over any further enquiry into the company's affairs until the question of jurisdiction has been settled by the courts.

No further action has been taken in the matter of the several reports on the condition of the street railway service, and it was not expected that there would be any conference between the Council and the company before the end of May. (May, pg. 237, and April, pg. 185.)

Niagara, Welland and Lake Erie Ry.—We are officially advised that it is expected to start construction almost immediately on a branch up north Main St. to Parkway Heights, Welland, Ont. This will be about a mile long and will involve the construction of a pile trestle over the Welland River. It is also proposed to build a branch along East Main St. to Rosedale, and an extension from the Michigan Central Rd., on South Main St., to the Dain Mfg. Co.'s plant at Dainville. These lines will involve the crossing of the G.T.R. in the one case and of the M.C. Rd. in the other. An interlocking plant will be installed at the G.T.R., but it has not yet been decided whether the M.C. Rd. will be crossed at grade, or by a subway. The company has power to extend its lines to Niagara Falls, and Port Colborne, thence along the Lake Shore to Fort Erie, altogether about 45 miles. T. R. Cumming, Welland, Ont., is Chief Engineer. (May, pg. 235.)

Nipissing Central Ry.—A deputation from Liskeard and vicinity waited on the Ontario Government, May 9, to urge the extension of the line from Liskeard to North Timiskaming, Ont. (Jan., pg. 39.)

Ottawa and St. Lawrence Electric Ry.—The Ontario Legislature has authorized the company to increase its capital stock to $5,000,000; to issue bonds for $30,000 a mile; has extended the time for construction, and allowed it to acquire the North Lanark Ry. shares, etc.

A meeting of the shareholders will be held at Ottawa, June 3, to approve of an agreement with the Ottawa and St. Lawrence Construction Co. for the building and equipment of the line. It is also proposed to change the head office from Ottawa to Toronto. F. Iveson, Toronto, is Secretary. (Mar., pg. 141.)

Portage Radial Ry. and Canal Co.—W. Richardson returned to Portage la Prairie, Man., May 8, and is reported to have stated that the directors had received two applications for the franchise to build the line, and that the applicants had been given to the end of the month to look into the project. The principal question was as to the amount of power for which customers could be obtained. (April, pg. 169.)

Quebec Ry., Light and Power Co.—We are officially advised that the company has under consideration a two mile extension over the Drouin bascule bridge across the St. Charles River into Limoilou, Que., but nothing definite has been decided. (May, pg. 2325.)

Regina Municipal Ry.—A Regina, Sask., correspondent writes:—"The construction of the extensions to the street railway system is being gone ahead with just as rapidly as material and workmen can be had. Over 200 men are now employed, and it is expected that over 400 will soon be at work. The double tracking of Dewdney

St. from Albert St. to Pasqua St. is being rushed, and as soon as this is completed the street will be paved. The Albert St. north line is nearing completion, and an effort is being made to complete the double tracking of Thirteenth Ave. during June. It will probably be well on in the summer before construction is started on the lines to the north eastern section of the city. As soon as the Broad St. subway is completed a car line will be laid from South Railway St. to Dewdney St. via the subway, which will give all sections of the city direct connection with the warehouse section. (May. pg. 235.)

St. John Suburban Ry.—Press reports state that this newly incorporated company has started surveys for its projected electric railway at St. John, N.B. J. A. Jones, St. John, is engineer in charge. (May., pg. 235.)

Saskatoon Municipal Ry.—We are officially advised that the contract for the building of the electric railway from Saskatoon to Sutherland, Sask., has been let to Lonergan and Hansford, Saskatoon. It will be approximately three miles long, and will be built under the direct supervision of E. Hanson, City Electrical Engineer. The line is being built by private interests, and on completion will be handed over to the city for operation. The Sutherland Town Council, May 8, passed a resolution offering to grant a franchise for the operation of an electric railway on certain streets if the proposed line were extended. A joint committee has been appointed to arrange the details.

The Saskatoon City Council has been approached by a real estate company with an offer of $5,000 towards the cost of an extension of the city car line to Tuxedo Park and vicinity.

The ratepayers are being asked to vote, May 16, on a bylaw to raise $100,000 for extensions of the street railway. (May, pg. 236.)

Swift Current, Sask.—Application has been made to the City Council for a franchise for an electric railway. The proposition is to build about six miles of line at a cost of about $150,000. The promoters have acquired two half sections of land in North Swift Current, on one of which a power house and car barns will, it is said, be built if the franchise is granted. F. H. Cooper, Chicago, Ill., is the principal promoter.

Toronto and York Radial Ry.—The Ontario Legislature has authorized the company to build a second track on certain parts of Yonge St., subject to conditions to be named by the Ontario Railway and Municipal Board, if the company and the Toronto City Council cannot agree. The Act also grants an extension of time within which the company may build certain lines authorized. (May. pg. 236.)

Toronto Eastern Ry.—The Scarboro, Ont., Township Council, May 12, approved of the route of this line to Scarboro Village. Construction is in progress between Bowmanville and Pickering, but is not being proceeded with at a rapid rate. While it is possible that this section will be finished this year, it is not likely that any further mileage will be put under contract at present. (May, pg. 236.)

Toronto Suburban Ry.—Work is in progress along this line from the west bank of the Humber River to near Guelph, Ont., by forces of local men working under the general contractor, Ewen Mackenzie. No contract, we have been informed, for the building of any part of the line beyond Guelph has been let. It is expected to have the greater part of the Toronto-Guelph line in operation by the fall. (May. pg. 236.)

Vancouver Island Hydro-Electric and Tramway Co.—Press reports state that all arrangements have been completed by a company with this title to build an electric railway at Ladysmith, Vancouver Island, B.C. The town has granted a franchise, and the company proposes to build extensions to Chemainus, Duncans, Nanoose and Nanaimo. It is stated that construction would be started at once and that 50 miles of track will be laid within the next twelve months. Montague Yates, Victoria, is interested in the company. (May, pg. 236.

Winnipeg Electric Ry.—It is expected that the extension to Stonewall will be completed, so far as tracklaying, by July, and that the ballasting and overhead work will be finished so as to permit of the operation of traffic early in the fall. The grading from Middlechurch to Stoney Mountain was practically completed last year, and work has been started on the remaining section of the line. (April, pg. 186.)

Halifax Electric Tramways Legislation.

The Nova Scotia Legislature, May 9, by a vote of 17 to 12, threw out the application for the incorporation of the Halifax Tramways and Power Co., and also threw out the Halifax City Council's application for authority to acquire the property and franchise of the H.E.T. Co. Summaries of these bills were given on pg. 237 of our May issue. Subsequently the Legislature took up the consideration of an application of the H.E.T. Co. for amendments to its act of incorporation and amending acts. The measure met with considerable opposition, but was passed May 13. It contains two sections, the first providing that the capital be increased from $1,500,000 to $2,000,000 by the issue of an additional 5,000 shares. The second section repeals the whole of chap. 78 of the statutes of 1912, which provided for an extension of the present franchise, which expires in 1910, for 21 years, on the present terms; the division of the net profits as follows:—a payment of a dividend of 8% on the common stock; an amount equal to 4% on the common stock to be set aside for extensions and improvements on the property; and the balance to be equally divided between the city and the company. This part of the act was only to come into operation by proclamation. The second part of the act, which came into force on passing, and was to remain in force for a year, prohibited any increase of the company's capital stock or borrowing powers, or the leasing or sale of the company to any other similar company. The object of the city in obtaining the passing of this act was to enable it to continue negotiations for the purchase of the property.

The Legislature has also passed an act amending the Public Utilities Act in several details. Arising out of the discussions on the affairs of the H.E.T. Co., the following amendment to the original bill was introduced May 10, and became part of the act as passed May 13:—"The powers, rights, and privileges secured to any public utility by virtue of any statute, or by any contract or agreement ratified by statute, shall not be altered, diminished or enlarged by the Board, but the Board may at any time enquire into any rights, powers, privileges, or limitations, enjoyed by or imposed upon any contract ratified by the Legislature, in so far as the exercise of the same affects the public interest and may make such recommendations to the Legislature in connection therewith as may seem right and just."

Electric Railway Finance, Meetings, Etc.

British Columbia Electric Ry.—Gross earnings for March, $571,163; operating expenses, $374,079; net operating earnings, $197,084; renewal funds, $51,620; net earnings, $145,464; approximate income from investments, $35,000; net income, $180,464, against $491,782 gross earnings; $307,958 operating expenses; $183,824 net operating earnings; $37,935 renewal funds; $145,889 net earnings; $25,000 approximate income from investments; $170,889 net income for March, 1912. Aggregate gross earnings for nine months ended Mar. 31, $5,137,701; net earnings, $1,751,543, against $4,283,459 aggregate gross earnings, and $1,510,420 net earnings for the same period 1911-12.

Cape Breton Electric Co.—A press report says that while the complete annual report is not available, it is known this company has passed through its best year. Announcement has been made that the directors have decided to increase the dividend rate from 5 to 6%, the new rate going into effect for the present quarterly declaration.

Cape Breton Electric Co.—Gross earnings for March, $28,099.37; operating expenses and taxes $15,965.83; net earnings $12,133.54; interest charges, sinking and improvement funds $5,081.66; net income $6,051.88, against $24,409.89 gross earnings: $15,856.32 operating expenses and taxes; $8,553.57 net earnings; $5,635.84 interest charges, sinking and improvement funds; $2,917.73 net income for Mar. 1912. Construction charges during March $6,387.69.

London St. Ry.—Gross earnings for April, $25,077.87; expenses, $19,668.40; net earnings, $5,409.47; deductions, $2,371.25; net income, $3,038.22; aggregate gross earnings for four months ended Apr. 30, $101,767.46; expenses, $73,035.06; net earnings, $28,713.50; deductions, $9,511.10; net income, $19,220.40.

St. Thomas St. Ry.—Cash fares and ticket sales for April, $1,430.70, against $1,113.79 for April, 1912. Passengers carried, 38,257, against 31,302 in April, 1912.

Saskatoon Municipal Ry.—Traffic receipts for April, $13,914.80; operating expenses, including interest on capital expenditure, and sinking fund, etc., $14,597.25. Average traffic receipts per car mile, $25.93; average number of passengers per car mile, 5.41; operating expenses per car mile, $27.20.

Sherbrooke Ry. and Power Co.—Press reports state that at a special meeting of shareholders on May 5, it was announced that the gross earnings were running about 50% higher than a year ago, and that the net results were showing a gain of over 25%. The prospects of the year were said to be excellent, particularly in the power department.

Toronto Ry., Toronto and York Radial Ry., and Allied Companies.—Gross earnings for March, $772,491; operating expenses, maintenance, etc., $405,788; net earnings, $336,703, against $668,194 gross earnings; $333,371 operating expenses, maintenance, etc.; $334,823 net earnings for March, 1912. Aggregate gross earnings for three months ended Mar. 31, $2 267,732; net earnings, $1,083,306, against $1,954,550 aggregate gross earnings; $984,099 net earnings for same period 1912.

Winnipeg Electric Ry.—Gross earnings for March, $329,016; operating expenses, $189,950; net earnings, $139,066, against $298,838 gross earnings; $161,826 operating expenses; $137,013 net earnings for March, 1912. Aggregate gross earnings for three months ended Mar. 31, $1,000,945; net earnings, $433,570, against $917,510 aggregate gross earnings, $415,338 net earnings for same period 1912.

Edmonton Radial Railway Co.'s Double Track Work.

Canadian Railway and Marine World for May gave some particulars as to the permanent track work decided on for this year. We have since been officially advised that contracts have been let for the following work:—

Street	From	To	Feet
Jasper	[illegible] St.	116th St.	1900
Namayo	Jasper	High Level Br.	5200
[illegible] West	Whyte		2080
Main	First St.	6th St. Scott	2080
[illegible]	24th St.	42nd St.	3600
Alberta Ave.	Kinistino	C.N.R. Tracks	6062
Namayo	First	Kinistino	1480
Jasper East	[illegible] Br.	Exhibition Grounds	[illegible]
[illegible]	First St.	24th St.	4240
[illegible]	Spruce	Oak	1180
Spruce	Kinistino	Agnes	[illegible]
Twenty-fourth	Short	Alberta	7120
Fifth East	Whyte	7th Ave. North	2300
Saskatchewan	9th St.	Curry St.	796
Curry	Saskatchewan	McDougall	1365
Twenty-fourth	Jasper	Stovel Place	1778
First	C N R Tracks	Norwood	4250
Whyte	4th St. West	7th St. West	600
Syndicate	Ross	Norwood	1700
Kinistino	Norwood	Alberta	3407
Whyte	7th St. East	Mill Creek	1000
Fifth East	7th St. West	11th St. North	1400

The contracts have been divided among the City Construction Co., Brown and Hargraves, Crown Paving Co., Worswick Co., Manders and Gregory, Bitulithic Co. and National Paving Co.

Sunday Operation by London and Lake Erie Ry. and Transportation Company.

At the Toronto Assizes in June, 1912, the Chancellor heard the case of W. Kerley, of St. Thomas, Ont., against the L. & L.E.R. & T. Co., claiming three penalties of $400 each for operating the line on three Sundays in Dec., 1911, or, as an alternative, an order to restrain the railway from operating on Sundays, the case having been entered with the Ontario Railway and Municipal Board's consent. The Chancellor gave judgment for the plaintiff, for $1,200 and costs of action, $600 to go to plaintiff, who has since died, and $600 to the city of London.

The case was appealed, and on May 5, Sir William Meredith, Chief Justice of Ontario, delivered the judgment of the Appellate Division, allowing the appeal with costs, and dismissing the original action with costs.

The company has started a Sunday service over the whole line between London and Port Stanley, leaving London and Port Stanley at 9.30 a.m., St. Thomas south at 8.40 a.m., and north at 9.15 a.m., and hourly thereafter, until the last car leaves London for Port Stanley at 8.30 p.m., Port Stanley for London at 9.30 p.m., and for St. Thomas at 10.30 p.m.

The Ontario and West Shore Railway Muddle.—Canadian Railway and Marine World for April and May contained full particulars of a report on the condition of this partly built line by H. W. Middlemiss, A.M.I.C.E., Toronto, and also other references to the history of the undertaking, and its apparent abandonment by its principal promoter, J. W. Moyes, of Toronto. In order to protect the municipalities which guaranteed the bonds, the Ontario Legislature has passed an act vesting the company's franchise and all property, rights and privileges in [illegible] of Dungannon, in trust for the municipalities, but subject to the rights of the company's creditors, and the bondholders and trustees for bondholders. The Ontario Railway and Municipal Board fixed May 20 as the date for hearing the various parties interested, with a view to arriving at [illegible] of the whole matter.

Personal Paragraphs.

PATRICK DUBEE, Secretary and Treasurer, Montreal Tramways Co., and President, Canadian Street Railway Association, has returned from England.

W. G. MURRIN has been appointed Mechanical Superintendent of the British Columbia Electric Ry. He comes from London, Eng., where he was connected in an executive capacity with the London United Ry.'s staff.

W. H. FRASER, of the British Columbia Electric Ry.'s staff, has been appointed Electrical Superintendent, vice D. M. Kennedy, resigned. Mr. Kennedy will spend the next few weeks travelling through Canada and the United States, inspecting electrical plants.

W. F. GRAVES, heretofore Superintendent of Tracks, Chicago City Railway, Chicago, Ill., has been appointed Chief Engineer and Superintendent of Construction, Montreal Tramways Co., vice J. D. Evans, resigned to enter another company's service.

This gem is from the Toronto Mail and Empire:—"Galt, May 18.—On Saturday former Mayor Thomas Patterson announced that he had authority from Monsignor W. J. Coleman, of the Dominion Power and Transmission Co. of Hamilton, for the statement that construction would start in the near future on a radial electric line from Hamilton to Galt."

H. H. HUMESTON has been appointed Superintendent of Transportation in charge of the operation of the cars, London St. Ry., London, Ont., vice J. A. Young, resigned. He was an employe of the company about ten years ago, and has since been in Detroit United Ry. service. The report that C. Johns, of St. Thomas, Ont., another former employe of the company, had been appointed, is incorrect.

Electric Railway Notes.

The Montreal Tramways Co. has received three steel street car bodies from Canadian Car and Foundry Co.

Three cars arrived at Brandon, Man., May 8, for the new municipal electric railway.

The American Electric Railway Association's annual convention will be held at Atlantic City, Oct. 13 to 17.

The Manitoba Commission of Public Utilities is considering the question of the interruption of the street car traffic by processions in Winnipeg.

The Edmonton Radial Ry. management is not, we are officially advised, contemplating the purchase of any more cars, as stated in press reports.

The Windsor, Essex and Lake Shore Rapid Ry. has received eight steel underframe flat cars, 40 tons capacity, from Canadian Car and Foundry Co.

The Aberdeen (Scotland) Tramways were the first in Europe to adopt p.a.y.e. cars, a converted car having been in use since Dec., 1912. Ten new double deck p.a.y.e. cars have been put in service recently.

The Brantford St. Ry. employes, it is reported, are organizing a union, to be affiliated with one of the larger organizations, in order to make a demand for increased pay and shorter hours. The present maximum rate is reported to be 16c. an hour.

The Guelph Radial Ry. is adding a double ended car of the p-a-y-e type, to its rolling stock. It is equipped with Westinghouse 101B2 motors, K28 controllers, Consolidated Car Heating Co.'s heating system, longitudinal seats, sanitary hand straps, etc., and is built by the Preston Car and Coach Co.

The Sunday operating of cars over the Toronto civic car line to East Toronto, was commenced, May 11, the authority necessary for such operation having been recently granted by the Ontario Legislature in an act promoted for various civic purposes.

The petitions for the rule nisi against E. A. Robert, President Montreal Tramways Co., and H. R. Mallison, Secretary of the Imperial Trust Co., in connection with their refusal to produce the original copy of the deed between the Corporation Agencies in the Superior Court, in the case of Vipond against Lovett, were dismissed May 12.

The Toronto and York Radial Ry., under authority of an act passed by the Ontario Legislature recently, commenced Sunday operation of its cars over the whole of its Metropolitan Division, May 18, on the same schedule as is in force on week days, which provides for cars between Toronto and Newmarket hourly, and from eight to ten cars through to Sutton during the day. Over 16,000 people were carried on the opening Sunday.

The motormen and conductors of the Port Arthur and Fort William Electric Ry. struck work, May 11, on their demands for a revised schedule being refused. The schedule under which they had been working has some time yet to run before expiry, and local opinion generally confirms the stand taken by the joint commission operating the line. A number of other men were engaged, and the service was recommenced, with some reductions.

The Hydro Electric Railway Act, providing for the construction and operation of electric railways throughout Ontario, by the Hydro Electric Commission, or by corporations under agreements with the Commission, and which was given in full in Canadian Railway and Marine World for May, passed its third reading in the Ontario Legislature, Apr. 21, with but two trifling verbal amendments, which do not in any sense alter the bill.

The Supreme Court of Canada has dismissed the appeal of the British Columbia Electric Ry. Co. vs. Vancouver, Victoria and Eastern Ry. and Navigation Co. This was an appeal by the B.C.E.R. Co. from a decision of the Board of Railway Commissioners, authorizing the V.V. & E.R. & N. Co. to construct Hastings, Pender, Keefer and Harris streets, Vancouver, across its tracks by overhead bridges, the B.C.E.R. Co. being ordered to pay 20% of the cost of constructing Harris Street and Hastings Street Bridges, the cost of depressing the V.V. & E.R. & N. Co.'s tracks to be included in the cost of the work. Two of the judges dissented from the judgment.

The Toronto Board of Control decided, May 19, to engage experts to value the Toronto Ry. and Toronto Electric Light Co.'s properties, the acquirement of which it is proposed to submit to the ratepayers in the near future, under legislation passed at the recent session of the Ontario Legislature, and which was fully dealt with in our last issue. B. J. Arnold, of the Arnold Co., Chicago, and J. W. Moyes, of Toronto, were mentioned as those likely to be appointed. In connection with the proposed acquirement of these properties, Sir William Mackenzie, President, stated on his return from Europe, that the two would have to be taken over together, as they could not be separated. Negotiations are proceeding between him and Mayor Hocken

Marine Department.

The Dominion Canal Statistics for the Season of 1912.

Following are the principal portions of the report on canal statistics for 1912, as issued by the Department of Railways and Canals:—

The total volume of traffic was as follows:—

	Tons.	Increase.	Decrease.
Sault Ste. Marie	39,669,655	8,717,946	.....
Welland	2,851,915	314,286	.....
St. Lawrence	3,477,188	371,480	.....
Chambly	618,415	18,586	.....
St. Peter's	74,809	.....	489
Murray	170,081	6,624	.....
Ottawa	392,350	72,279	.....
Rideau	160,133	.....	12,094
Trent	77,150	19,860	.....
St. Andrews	95,549	48,414	.....
Total	47,587,245	9,569,475	12,583

The increment for the year 1912, as compared with 1911, was 9,556,892 tons, equal to 25.1%.

It must not be assumed that the net business of the canals amounted to 47,587,245 tons. There is duplication to the extent of several million tons, and unavoidably so. For example, all traffic between Fort William and Montreal is first credited to the canal at Sault Ste. Marie, then to the Welland Canal, and finally to the St. Lawrence Canals. In the same way, freight shipped from Ottawa to New York finds a place first in the returns of the Ottawa River Canals, next the Lachine Canal, and lastly in the Chambly Canal. This situation is not essentially different from that which arises with regard to railway traffic, and is inseparable from the statistical system which has long been in vogue. In dealing with the question of the average freight rate on the inland waters further on the actual net tonnage will be indicated.

The following statement shows the growth of traffic through the canals during the past decade:—

1903	9,203,817	Tons
1904	8,256,236	"
1905	9,371,744	"
1906	10,523,185	"
1907	20,543,639	"
1908	17,502,820	"
1909	33,720,748	"
1910	42,990,608	"
1911	38,030,353	"
1912	47,587,245	"

The expansion for the ten year period between 1903 and 1912 was 417%.

The following comparative statement of traffic shows on what canals the growth has taken place during the past four years:—

	1909.	1910.	1911.	1912.
Sault Ste. Marie	27,861,245	36,395,687	30,951,709	39,669,655
Welland	2,025,951	2,326,290	2,537,629	2,851,915
St. Lawrence	2,410,629	2,760,752	3,105,708	3,477,188
Chambly	752,117	669,299	599,829	618,415
St. Peter's	70,850	85,951	75,298	74,809
Murray	102,201	180,911	163,457	170,081
Ottawa	336,939	385,261	320,071	392,350
Rideau	91,774	131,881	172,227	160,133
Trent	50,952	46,293	57,290	77,150
St. Andrew's	.....	8,283	47,135	95,549

Comparing the years 1911 and 1912, following was the tonnage by classes and canals:—

	Agricultural Products. Tons.	Animal Products Tons.	Manufactures. Tons.	Products of Forest. Tons.	Products of Mines. Tons.	Total. Tons.
1911						
Sault Ste. Marie	3,219,929	978	854,516	56,853	26,819,433	30,951,709
Welland	1,089,605	574	539,865	250,423	657,162	2,537,629
St. Lawrence	1,003,090	9,943	557,992	551,155	983,528	3,105,708
Chambly	41,903	315	25,370	396,704	135,537	599,829
St. Peter's	16,538	2,153	11,828	7,120	37,659	75,298
Murray	1,109	113	143,390	1,631	17,214	163,457
Ottawa	9,779	2,167	65,452	202,797	39,576	320,071
Rideau	6,084	2,684	114,937	34,350	14,172	172,227
Trent	951	307	12,551	31,342	12,040	57,290
St. Andrew's	82		33,153	13,773	127	47,135
Total	5,389,070	19,624	2,359,063	1,546,139	28,716,457	38,030,353
1912.						
Sault Ste. Marie	4,530,792	372	975,303	34,114	34,129,074	39,669,655
Welland	1,205,912	678	625,569	227,684	792,072	2,851,915
St. Lawrence	1,119,567	9,375	464,091	578,760	1,305,395	3,477,188
Chambly	19,706	338	11,600	425,313	161,458	618,415
St. Peter's	15,427	2,996	7,583	11,161	37,642	74,809
Murray	448	37	101,511	706	67,379	170,081
Ottawa	5,278	2,880	20,958	226,600	136,634	392,350
Rideau	3,995	3,151	18,814	28,642	105,531	160,133
Trent	2,514	361	3,459	67,489	3,327	77,150
St. Andrew's	37	...	60	14,153	81,299	95,549
Total	6,903,676	20,188	2,228,948	1,634,622	36,799,811	47,587,245

The ratio which each of the foregoing classes bore to the total volume of traffic during the past three years is shown in the following statement:—

	1910. Per cent	1911 Per cent	1912 Per cent
Agricultural products	10.2	14.2	14.51
Animal products	1.2	.1	.04
Manufactures	5.2	6.2	4.68
Produce of forests	3.9	4.0	3.43
Produce of mines	79.5	75.5	77.34

Until 1908 a separation was not made as between Canadian and United States traffic. Since that date a record has been kept of the country of origin, as far as the canals of Canada are concerned. The facts with respect to vessel tonnage and freight tonnage during the past five years are given in the following table:

	Canadian Vessels.		U.S. Vessels.		Freight Tonnage.		
Year.	No.	Tonnage.	No.	Tonnage.	Canadian.	United States.	Total.
1908 ...	29,040	6,780,789	7,489	4,835,320	5,012,147	12,490,673	17,502,820
1909 ...	22,507	7,811,578	9,996	16,459,322	7,378,057	26,342,691	33,720,748
1910 ...	25,337	8,931,790	11,462	21,777,297	7,883,614	35,106,994	42,990,608
1911 ...	25,585	9,172,192	10,370	18,231,622	7,792,907	30,237,446	38,030,353
1912 ...	27,371	10,237,335	11,785	24,636,190	9,376,529	38,210,716	47,587,245

The proportions of freight tonnage originating in Canada and the United States during the five years for which the facts are available, have been as follows:—

Year.	Canadian per cent.	U.S. per cent.
1908	28.7	71.3
1909	21.8	78.2
1910	18.3	81.7
1911	20.5	79.5
1912	19.7	80.3

The large and growing difference between the traffic of Canada and the traffic of the United States through Canadian canals, arises almost wholly at Sault Ste. Marie. For example, in 1912 the proportion of strictly Canadian traffic which passed through the Canadian canal at Sault Ste. Marie was 10.3, and the traffic of that canal represented 83% of the total for the whole Dominion. Of the traffic which passed through the Canadian canal at Sault Ste. Marie in 1912, iron ore constituted over 87%. In other words, out of 35,579,293 tons of U.S. traffic at Sault Ste. Marie, 31,141,063 tons was made up of iron ore.

The situation changes at the Welland. In 1912, out of a total of 2,851,915 tons, Canadian traffic aggregated 1,553,116 tons, or 54%. The St. Lawrence canals during the same period showed 2,340,143 tons of Canadian business, out of a total of 3,477,188, or 67%. The proportions with regard to vessel tonnage in 1912 were: Canadian, 29.36%; United States, 70.64%.

The rapid settlement of the Western provinces has created a steadily deepening interest in the movement of Canadian wheat. From 1895 down to 1909 a separation of Canadian and U.S. products was not made in canal statistics; but since the latter year a careful record has been made of the facts in that regard. The following shows the volume of Canadian wheat brought down through the Canadian canal at Sault Ste. Marie:

	Bushels.
1895	4,518,334
1896	19,314,234
1897	17,925,834
1898	9,746,600
1899	12,759,634
1900	9,292,034
1901	9,639,534
1902	27,912,500
1903	32,233,934
1904	29,794,100
1905	25,983,100
1906	34,389,300
1907	49,399,967
1908	58,574,034
1909	*48,047,833
1910	51,774,833
1911	63,641,000
1912	83,743,034

*For the first time represents Canadian wheat only. The figures of preceding years include U.S. wheat which passed through the Canadian canal.

The foregoing figures do not represent the total volume of Canadian wheat which came down from the Northwest in 1912. They have reference wholly to the number of bushels which passed through the Canadian canal at Sault Ste. Marie. There came through the U.S. canal at that point 23,020,833 bush. It was ascertained from the Customs Department that 10,724,498 bush. of Canadian wheat went out from Duluth in 1912 in bond. Of this latter quantity 7,646,634 bush. had been accounted for in the totals of the two canals at Sault Ste. Marie, leaving 3,078,264 to be added to the figures just given. The total quantity of Canadian wheat moved by water in 1912 would therefore be 109,842,031 bush., as compared with 65,622,481 in 1911.

Without reference to which of the two canals was used at Sault Ste. Marie, the

[illegible]

[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]

[illegible] rels passed through the Canadian and U.S. [illegible]

[illegible] with respect to the Canadian canal. In 1912 copies were procured of all ships' reports taken at the U.S. canal; so that more comprehensive figures are this year made available. Taking first the Canadian canal, following was the distribution of Canadian wheat in 1912:—

	Bushels
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]

[illegible] Marie the distribution of Canadian wheat [illegible]

Fort William to Montreal	1,292,911
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]

[illegible]

[illegible]	[illegible]	[illegible]
" Georgian Bay.	19,501,168	17.8
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
Duluth to Montreal	281,500	.2
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]

[illegible] in the above statement are ports between [illegible]

[illegible]

Fort William to Montreal ...	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	9,881,214	19,501,168
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	461,500	1,418,767
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible] presents [illegible] Canadian [illegible]

[illegible]

	[illegible]	[illegible]	1911	1912.
Fort William to Montreal	21.9	25.5	[illegible]	[illegible]
[illegible]	27.9	[illegible]	[illegible]	17.8
[illegible]	[illegible]	18.5	18.7	18.6
[illegible]	26.7	30.3	[illegible]	40.2
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	...	...	..	[illegible]

[illegible] sure the conditions which have operated [illegible]

[illegible] for the ascertaining of the average rate per [illegible] plans involved the recording of the freight rate in each ship's report filed at the various canal offices. As an alternative those operators who wished to do so were per[illegible] Ottawa of tonnage, mileage and gross [illegible] required to send in at the close of the sea[illegible] total ton mileage of loaded vessels, gross [illegible] having regard to the difficulties which are inseparable from the inauguration of new undertakings of that character, the results [illegible] net Canadian tonnage of 6,942,278, definite information was received with regard to the mileage and freight earnings on 6,292,661 tons. St. Peters and St. Andrews canals were left out of the scheme for 1912, and they accounted for 170,358 tons; so that the actual net Canadian tonnage affected was 6,771,920. Returns were thus received in relation to 93% of Canadian [illegible] of traffic, and it might reasonably be assumed that had every ton been accounted for, the result would not have been altered.

The Canadian returns applied to 6,292,661 tons of freight, to 3,286,187,160 ton miles, and to gross freight earnings amounting to $6,378,893.43. From U.S. shipping companies reports were received covering 26,030,661 tons, out of a total net tonnage of 36,840,812. These reports had reference to all classes of commodities, and were thoroughly typical of the whole business on Canadian inland waters. It may be confidently asserted that absolutely complete returns would not have materially affected the final calculation of the average rate per ton per mile. The number of ton miles ac[illegible] the gross earnings on U.S. freight to $14,[illegible]

Using the factors which have been indi[illegible] ings from freight the results are as fol[illegible]

Canadian traffic:—
Average rate per ton .... 91. 04 cents.
[illegible]

U.S. traffic:—
Average rate per ton .... 56. 62 cents.
[illegible]

Without an explanation, the difference [illegible]

[illegible]

134,251 tons, or nearly 85%, consisted of [illegible] Upbound coal accounted for a further 2,945,441 tons, or 8%. In fact, if iron and coal were eliminated from the total account, the volume of Canadian traf[illegible] the U.S. The transportation of iron ore and coal is a special feature of the trade of the Great Lakes. Most of the ore is carried by the vessels of the Pittsburg Steamship Co., and the rate in 1912 was 55c per ton from the head of Lake Superior to ports on Lake Erie. These vessels are owned and operated by the iron interests of Pittsburg, and do not carry other commodities than ore and coal—ore down and coal up. For this upbound coal, without regard to ownership of the vessels, the rate last year was 30c. per ton. Thus, while wheat was being carried to Buffalo at as high a rate as 2.616c per ton per mile, iron ore was passing over the [illegible] Coal was being moved upward at the still lower rate of .046 per ton per mile. In a word, any analysis of freight rates on Canadian inland waters would be misleading which failed to recognize, and to separate for special treatment, this overwhelming movement of ore and coal under the conditions indicated.

To measure the conditions which influenced the movement of Canadian wheat to Montreal or Buffalo, it is necessary to know the freight rate on wheat from Buffalo to the Atlantic seaboard during 1912. It was officially ascertained from the Buffalo Chamber of Commerce on Feb. 14, 1913, that these rates per bushel were:—May to end of Sept., on lake wheat for export, 4½c.; in October, 5½c.; after Nov. 15, 6c. Thus, the all water rate from Fort William to Montreal in May was 5.444c. per bushel, and the combined water and rail rate from Fort William to the U.S. seaboard (say New York) was 7.219c. In November, the water rate from Fort William to Montreal was 7.129c. per bushel, and the combined water and rail rate from Fort William to the U.S. seaboard, via Buffalo, was 8.616c. The apparent difference in favor of Montreal was 1.765c. per bushel in May, and 1.487c. in November, so far as the rates of freight were concerned.

There remains to be presented the facts with respect to traffic by way of Fort William and Georgian Bay ports. The average rate for the season was [illegible] per bushel. It was officially ascertained that the rail rates from Georgian Bay to Montreal were as follows:—

C.P.R.	[illegible] per bushel
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]

The movement of Canadian wheat dur[illegible] division of this report. There remains the matter of the freight rate on it. Special care was taken during the year to ascertain with accuracy the rates which were charged on waterborne wheat. The facts in that [illegible]

[illegible]	
[illegible]	[illegible]
[illegible]	[illegible]
Fort William to Georgian Bay:—	
[illegible]	[illegible]
[illegible]	[illegible]
Fort William to other Canadian ports:—	
Per ton per mile	.115 "
[illegible]	[illegible]
[illegible]	
[illegible]	[illegible]
Per bushel	5.774 "

[illegible] the highest [illegible]. The [illegible] per ton per mile and per bushel [illegible] as follows:—

Fort William to [illegible]
[illegible]

These show that any vessel [illegible] from Fort William to Montreal [illegible]. The average [illegible] Fort William [illegible] Montreal [illegible] per ton per mile and [illegible] per bushel [illegible] from Fort William to Buffalo [illegible] per ton per mile [illegible] per bushel. The [illegible] Fort William and Montreal [illegible].

Speaking broadly, it might be assumed that the combined [illegible] and rail rate is governed by [illegible].

In the grain situation in 1911 the [illegible] of Canadian grain from Canada to U.S. channels, despite the lower transportation cost between Fort William and Montreal, were discussed. Among these were:—The [illegible] of ocean tonnage at New York, [illegible] at foreign ports, and [illegible] in 1912.

The question is frequently, and quite naturally, asked—How do freight rates by water compare with freight rates by rail? It has always seemed to the writer, as the officer of this Department in charge of transportation statistics, that data should be available which would permit such a comparison to be fairly made. But the question will never be fully and satisfactorily answered until [illegible] for the first time, [illegible] information has been obtained with regard to the average rate per ton per mile on the [illegible] of the Great Lakes. That rate, so far as Canadian business was concerned, was found to be [illegible] cent. It is pointed out, however, that this rate does not take account of the special conditions under which traffic on the inland waters of Canada is conducted, and the contribution of the Government should be taken into the reckoning. [illegible] in such a connection. It would seem, at all events, to be proper to include the interest charge on the capital cost of the canals and the annual outlay by Government for operation. The facts in that regard are definitely known. [illegible] which might be included [illegible] the matter is [illegible] being the amount of [illegible] is not definitely known. The capital cost of the canals concerned with Canadian inland waters was, up to Mar. 31, 1912, [illegible]. The interest on this capital cost, at [illegible], would be [illegible]. The cost of maintenance of the Canadian canal system for the year ended Mar. 31, 1912, was [illegible]. These items added together give a total of [illegible]. [illegible]

[illegible]

[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

[illegible] from Fort William to Montreal [illegible] a ton [illegible] a ton. [illegible] Fort William and Montreal would be equal to [illegible] a ton. [illegible]

The average rate per ton per mile of all Canadian railways for the year ended June 30, 1912, was [illegible] cent. [illegible] in 1912. [illegible] traffic in any particular channel.

For the season of 1913 the insurance rates in force on Canadian inland waters were as follows:—[illegible] the hull, covering all risks from the head of the lakes [illegible]. An additional [illegible] was charged [illegible] and a further [illegible] was payable from [illegible] to Montreal. Thus the rate on a vessel running from Fort William to Montreal was [illegible]. A still further charge of [illegible] of the [illegible] Association of [illegible] to the Canadian Lake [illegible] Association.

The Richelieu and Ontario Navigation Company's Schedule for 1913.

Following on the [illegible] of the R. & O. N. Co., a complete revision of the sailing schedule for the passenger steamers has been arranged as follows:—

TORONTO—CHARLOTTE—MONTREAL LINE.—[illegible] Kingston [illegible]

MONTREAL—QUEBEC LINE.—[illegible] Montreal [illegible] Quebec.

[illegible] LINE.—[illegible]

[illegible] LINE.—[illegible]

[illegible] TORONTO—HAMILTON LINE.—[illegible] Chicora.

Vessels and Officers for 1913, of Inland Lines, Limited.

[illegible]

[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]

The [illegible]

The Reid Newfoundland Company's s.s. Kyle.

The R.M.S. Kyle has been built recently at Newcastle on Tyne, Eng., for the Reid Newfoundland Co., for its coastal service between St. John's, Nfld., and Cape Chidleigh, on the coast of Labrador, a service occupying a fortnight for the round trip, and often having to be carried on through ice.

The vessel is finely modelled, 220 ft. long by 32 ft. beam, and has passenger accommodation for 68 first class and for 141 second class. The accommodation generally is of the most up to date and comfortable description, being well lighted electrically, heated by steam and thoroughly ventilated. The first class passengers will be berthed amidships. They will have a fine promenade deck, and in a house on that deck there is a comfortable smoking room, the walls being of oak, slightly fumed, with corresponding furniture upholstered in green leather. In the same house are the captain's room, the chief officer's room, and the wheelhouse. Below this, on the upper deck, are the ladies' room and the first class dining saloon. The ladies' room has walls of sycamore, satinwood furniture upholstered in old rose moquette, and the whole effect is very charming. Aft of the ladies' room is the entrance to the first class dining saloon, which is a fine room with walls and furniture of polished mahogany, the latter being upholstered with blue leather. This room is divided from the entrance by a very effective screen of polished mahogany, filled in with stained glass. The entrance hall and staircase connect the smoking room, dining saloon and first class staterooms, etc., and are panelled with polished mahogany, whilst the floor is of indiarubber tiling. There are 15 first class staterooms on the main deck below the dining saloon, with accommodation for 68 persons, one room being for ladies, with 10 berths. These are all enamelled white, with mahogany furniture and upholstered with rose colored moquette. The second class passengers will be berthed in the after part of the vessel. On the main deck there is a compartment for 102 men, and aft of this another for 39 women. Above, on the upper deck, right aft, there are two hospitals, one for men, the other for women, together with rooms for doctors, baths, etc. The officers and engineers have rooms on the main deck at the sides of the engine casing, and the galley is placed on the upper deck forward of the engine casing, conveniently near the dining saloon.

The vessel is fitted with an installation of wireless telegraphy, a complete installation of electric light, including a search light, and an efficient arrangement of steam heating suitable for the climate. She is propelled by a set of single screw triple expansion engines, having cylinders, 18½, 30½ and 50 ins. dia. by 36 ins. stroke, supplied with steam from two single ended boilers, 13¾ ft. dia. by 11½ ft., fitted with six corrugated furnaces, and working under forced draught at a pressure of 180 lbs. per sq. in., the main condenser being of the latest "Uniflux" type. On the trial trip off the Tyne, a speed of 13¾ knots an hour was attained. Amongst the auxiliary machinery in the engine room may be mentioned steam and hydraulic reversing engines, a pair of feed pumps with direct contact feed heater, a centrifugal circulating pump, a feed water filter, auxiliary condenser, two steam ash hoists, an indicator fitted on bridge to indicate the movement of the main engines, circulators to the boilers, etc.

The trial trip was made on May 5, when the owners were represented by R. G. Reid, General Superintendent.

Reid Newfoundland Co.'s R.M.S. Kyle.

New Steamboat for Canadian Pacific Ry. Kootenay Lakes Service.

The steamboat Nasookin, which was built at Port Arthur, Ont., and shipped to Nelson, B.C., where she was reassembled was launched at Nelson, Apr. 30. Her dimensions are, length between perpendiculars, 200 ft., length over all 236 ft., beam 40 ft., draught 5 ft. She will be driven by a stern wheel, 24 ft. diar., and the propelling machinery will consist of tandem compound jet condensing engines with cylinders 16⅝ and 35⅝ ins. diar. by 96 ins. stroke, supplied with steam at 200 lbs. by a locomotive boiler. The hull is entirely of steel, and her total displacement will be about 600 tons. Passenger accommodation for over 200 is arranged on three decks, the whole being of the most modern type, the furnishing being chiefly in cedar panelling finished in white enamel. A complete electric lighting plant is being installed by the Canadian General Electric Co., and the fire apparatus and life saving appliances are most complete. The construction is being carried out under the general supervision of J. C. Gore, Superintendent of the B.C. Lake and River Service.

The new harbor at Rotterdam, Holland, will, it is said, be the largest artificial harbor in the world, the water having covered 766 acres. It will be 28 ft. deep.

Transfer of the Jaques Steamboats.

Inland Lines Ltd., which is owned by the Richelieu and Ontario Navigation Co., has acquired the Montreal and Great Lakes Steamship Co.'s steamboat Bickerdike, and the Jaques Transportation Co.'s steamboat C. A. Jaques, and will operate them in connection with its other vessels, as it will also the steamboats City of Hamilton and City of Ottawa, owned by the Montreal and Lake Erie Steamship Co. Following are the chief particulars of the vessels mentioned.—City of Hamilton, built at Buffalo, N.Y., 1871, former name, Japan, length 220 ft., breadth 32.5 ft., depth 14 ft.; tonnage, 1,574 gross, 869 register, screw driven by engine of 80 n.h.p.; City of Ottawa, built at Buffalo, N.Y., 1871, former name, India, length 220 ft., breadth 32.5 ft., depth 14 ft.; tonnage, 1,529 gross, 838 register, screw driven with engine of 80 n.h.p.; Bickerdike, built at Buffalo, N.Y., 1873, former name, Arabia, length 233 ft., breadth 34.5 ft., depth 14.2 ft., tonnage, 1,515 gross, 864 register, screw driven with engine of 124 n.h.p.; C. A. Jaques, built at Dumbarton, Scotland, 1909, length 249 ft., breadth 43 ft., depth 22.7 ft., tonnage 2,105 gross, 1,590 register, screw driven with engine of 212 n.h.p. This last mentioned vessel is on the British register.

We are officially advised that captains and chief engineers have been appointed, as follows,—Bickerdike, captain, D. Charland, chief engineer, J. Melville; City of Hamilton, captain, J. L. Baxter, chief engineer, J. White; City of Ottawa, captain, A. Mackay, chief engineer, P. Lefaive.

New Steamship Princess Maquinna for Canadian Pacific Railway British Columbia Coast Service.

The C.P.R. s.s. Princess Maquinna, which is stated to be the largest vessel to have been built at Esquimalt, B.C., will shortly be ready to undergo her steam trials. She is intended for service on the west coast of Vancouver Island. She has been specially designed for this somewhat rough service, all the decks, with the exception of the boat deck, being enclosed by the steel sides of the vessel, and the usual housing above the awning deck has been eliminated.

She is built of steel throughout, in accordance with Lloyd's rules for class 100 A1. There is a double bottom and she is fitted with five tanks, the third, situated under the cross bunker, being reserved for the storage of oil fuel. There is passenger accommodation for 104 first and about 30 second class, the first class staterooms all being located on the awning deck. On the main deck, aft, is the dining saloon, with accommodation for 90 passengers. The walls are panelled in mahogany, with cornices and pilaster finishing. The smoking room is located on the boat deck, aft, and is finished in hard wood. On completion she will be equipped with eight metal seamless lifeboats, each 22 ft. long, and there will be a complete fire service. The propelling machinery consists of triple inverted direct acting surface condensing engines, with cylinders 20, 34 and 53 ins. diar., by 36 ins. stroke, suppled with steam at 180 lbs. by two boilers, each 13½ by 12 ft.

Two derricks will be placed aft, two forward, and two for the main hatch. The speed of the vessel provided for in the contract is 13½ knots an hour, but it is anticipated that she will exceed this in her trials.

Compulsory Use of Radiotelegraphy on Canadian Vessels.

The bill to provide for the compulsory use of radiotelegraphy on Canadian vessels, after having passed through the House of Commons, recently received its first and second readings in the Senate. Since the bill was originally introduced some amendments have been made, chiefly at the instance of the Dominion Marine Association, a number of the member companies of which contended that the principal provisions created a considerable hardship on them. The amended portion of the bill, provides that from July 1, 1913, vessels trading from any Canadian port, whether registered in Canada or not, carrying 50 or more persons and plying between ports more than 200 miles apart; or carrying 250 or more persons and plying between ports more than 90 miles apart; or carrying 500 or more persons and plying between ports more than 20 miles apart, must be equipped with radiotelegraph apparatus capable of receiving and transmitting messages at least 100 miles. Vessels operating on the rivers of Canada, including the St. Lawrence as far seaward as Father Point, or on the lakes of Canada, except Ontario, Erie, Huron and Superior, are exempt from the provisions of the bill, as are also vessels operating in the Bay of Quinte, and on the Toronto-Hamilton route in Lake Ontario, and in the Georgian Bay in Lake Huron.

The Dominion Marine Association and C. J. Smith, then General Manager, Richelieu and Ontario Navigation, and subsequently, H. H. Gildersleeve, Manager, Western Lines, R. & O. N. Co., failed to have the vessels plying between Toronto and the Niagara River exempted, but on the motion for the third reading of the bill in the Senate, May 15, it was referred to a committee so that the company might make representations on the subject, with a view to further amendment.

Since the bill left the House of Commons Marine and Fisheries Committee, and prior to its passage through the lower house, the date when it is to become effective was changed from July 1, 1913, to Jan. 1, 1914, and the provision in sec. 7, for a penalty of $500 and costs and 6 months imprisonment for infringement was altered to read, $500 and costs or 6 months imprisonment.

The New Welland Ship Canal.

Rapid progress is being made in the preparation of the plans for the new Welland Canal, by the canal engineers, and it is expected that they will shortly be approved by the Dominion Government.

Connecting Lakes Erie and Ontario, this projected canal will be the third one to be built, the present one being commonly called the new canal, and the original one the old canal. The projected canal will here be referred to as the new canal, and not the existing one as at present.

The route of the canal on entering from the south, at Port Colborne, is the same as that of the present canal as far as Thorold, from which point the new canal will follow an almost straight line through Merritton to Lake Ontario, coming out into the latter at the mouth of Ten Mile Creek, about 3 miles east of the present outlet at Port Dalhousie. The present canal at Thorold swings off to the east in a wide sweep, and then back in a northwesterly direction. The new route, following an almost due northerly route, will cross the present canal at Merritton. The section of the existing canal between Thorold and Merritton is to be abandoned, but the portion of the present canal from Merritton to Port Dalhousie will be retained as an accessory to the new canal. The territory at present covered will thus be practically unchanged as regards the presence of a canal service.

The existing canal has 25 locks, 270 by 45 ft., with a depth of 14 ft. of water over the sills. The total drop from the highest stretch of canal level, which is 568 ft., the mean level of Lake Erie, is 325.5 ft., to the Lake Ontario normal water level of 242.5 ft. The length of this canal is 26.75 miles.

The new canal is to have 7 locks of which nos. 4, 5 and 6 from Lake Ontario will be in flight, each 800 by 80 ft., with a lift of 46.5 ft., with 30 ft. of water over the sills. The levels of the present and new canals at Merritton will be the same, making possible their joining there. The main gates of the new canal are to be of the single leaf type, with mitre gates for places of minor importance. While the depth of the locks is to be 30 ft., the intermediate distances are only to be enlarged to a 25 ft. depth at present, pending future requirements. The total length will be 25 miles.

The time of lockage of the present canal is from 11 to 20 mins. per lock. In the new canal, on account of the increased size of the locks, it is expected that this time will average about 20 mins. As there will be 18 fewer locks, the saving in locking time will be in the neighborhood of 3 hours.

The plans for the canal have been developed under the direction of J. L. Weller, M. Can. Soc. C.E., Engineer in Charge, St. Catharines, and Alfred Noble, of New York, has been retained as a consultant in connection with the work.

During April, 33 steam vessels, with a total net tonnage of 1,221, and 24 sailing vessels, with a total net tonnage of 2,482, were removed from the Canadian register.

The Richelieu and Ontario Navigation Co. has abolished the position of Naval Architect, formerly held by A. Angstrom.

List of Steam Vessels Registered in Canada during April, 1913.

No.	Name	Port of Registry	When and Where Built	Length	Breadth	Depth	Gross Tons	Reg. Tons	Engines, Etc.	Owner or Managing Owner
133823	A. V. Roy ..	Montreal	1913 Sorel, Que.	97 5	24 1	8 0	173	83	56½ n h p sc.	Sincennes-McNaughton Line, Ltd., Montreal.
133802	Adonia S. ..	Lunenburg, N.S..	1913 Tancook, N.S.	46 8	12 4	6 0	19	15	1 " "	D. Slauenwhite, M.O., Terrence Bay, N.S.
133734	Baboe (a) ..	Vancouver, B.C..	1909 Dockton, Wash. ...	39 5	13 4	4 5	18	13	2½ " "	Powell River Co., Vancouver, B.C.
131134	Batchawana .	Ottawa	1912 Toronto	49 0	13 0	7 7	52	29	4 4-5 " "	Minister of Railways and Canals, Ottawa.
133740	Bentinck (b)	Vancouver, B.C..	1912 Hoquiam, Wash. ..	52 0	15 0	7 4	34	23	4 " "	Ocean Falls Co., Vancouver, B.C.
131010	Betty D (c)..	St. John, N.B...	1898 Buffalo, N.Y.	86 2	23 4	10 8	145	98	80 " "	Norton Griffiths Dredging Co., Montreal.
133825	Cabotia (d) .	Montreal	1880 Gibraltar, Mich. ..	243 5	35 6	19 6	1530	932	" "	A. McLaurin, Montreal.
131056	Calgarian ...	Port Arthur, Ont.	1913 Port Arthur, Ont. ..	244 0	42 8	26 0	2326	1302	115 3-5 " "	Western Dry Dock & Shipbuilding Co., Ltd., Port Arthur, Ont. (1)
133826	Canobie (e) .	Montreal	1887 Detroit, Mich.	259 3	37 4	19 8	1748	1051	94 2-5" "	Lehigh Coal Co., Montreal.
133841	Cavalier II .	Vancouver, B.C.	1913 Vancouver, B.C. ...	28 5	8 0	3 7	6	4	1 " "	G. T. Wadds, Vancouver, B.C.
133736	Chief Skugaid	" "	1913 " ...	77 1	18 0	8 0	80	55	3¾ " "	Canadian Fish & Cold Storage Co., Vancouver, B.C.
131136	Estevan ...	Ottawa	1912 Collingwood, Ont. ..	212 0	38 0	15 3	1161	607	175 " "	Minister of Marine and Fisheries, Ottawa.
88682	Excudit (f)..	St. John, N.B...	1885 Portland, N.B. .... 1913 St. John, N.B. ...	73 5	17 5	7 9	105	89	1 " "	R. A. Cameron, St. John, N.B.
133737	Fredelia III..	Vancouver, B.C.	1912 Seattle, Wash.	44 5	13 0	5 4	25	17	2½ " "	Canadian Fish & Cold Storage Co., Vancouver, B.C.
131042	I Go	Sorel, Que.	1910 Sorel, Que.	46 6	8 0	3 2	7	5	1 1-5" "	R. Wilkie, Sorel, Que.
133821	John Duncan.	Montreal	1891 Green Bay, Wis. ..	233 0	37 6	20 3	1517	924	96 " "	Canada Cement Transport, Ltd., Montreal.
130871	Lilono	N. Westminster.	1912 N. Westminster, B.C	35 8	8 3	3 0	8	5	1½ " "	W. R. Jaynes, New Westminster, B.C.
130627	Lily M Hodge	Yarmouth, N.S..	1913 Yarmouth, N.S. ...	56 0	13 7	6 6	34	28	2 " "	Lockeport Cold Storage Co., Lockeport, N.S.
131048	M. & F. No. 8	Sorel, Que.	1906 Sorel, Que.	264 0	45 1	18 4	2050	1270	154 " "	Minister of Marine and Fisheries, Ottawa.
131049	M & F o (g)	"	1905 Dantzig, Germany ..	235 5	38 8	13 5	1332	838	136 " "	" " " "
131132	Maggie K ..	Ottawa	1912 Buckingham, Que...	48 2	11 5	4 4	25	13	4 4-5" "	Minister of Public Works, Ottawa.
131180	Malada	Lunenburg, N.S.	1913 Tancook, N.S.	47 2	13 3	7 0	22	21	1 1-5" "	H. Fleet, M.O., Blandford, N.S.
130870	Miono	N. Westminster.	1911 N. Westminster, B.C	30 0	6 6	2 0	5	3	1 " "	R. Jaynes, New Westminster, B.C.
133731	Miowera	Vancouver, B.C..	1910 Vancouver, B.C. ...	35 5	9 3	5 0	12	8	1 4-5" "	W. F. Clapham, Vancouver, B.C.
133752	Muscallonge	St. John, N.B...	1896 Port Huron, Mich...	128 0	24 5	12 0	360	245	51 " "	Norton Griffiths Dredging Co., Montreal.
133738	Nasutlin	Vancouver, B.C..	1912 Whitehorse, Yukon.	115 0	27 1	3 8	405	256	9 " pa.	British Yukon Navigation Co., Vancouver, B.C.
133751	Nereid	St. John, N.B...	1912 Waterborough, N.B.	53 6	15 6	6 3	40	28	13 " sc.	I. W. Smith, St. John, N.B.
131133	Orkney	Ottawa	1913 Ottawa	25 8	6 2	2 8	3	2	3-5" "	J. L. Scobie, Bristol, Que.
133753	Pluvia (j) ..	St. John, N.B...	1901 Phippsburg, Me. ...	49 3	16 5	6 5	42	29	10 3-5" "	Norton Griffiths Dredging Co., Montreal.
133822	Pueblo	Montreal	1891 Milwaukee, Wis. ...	236 1	36 3	19 3	1493	905	88 " "	Canada Cement Transport, Ltd., Montreal.
133824	Sarnor (k) ..	"	1888 West Bay City, Mich. 1896 Marine City, Mich..	227 6	36 0	21 3	1319	1152	80 " "	H. M. Norris, Montreal.
133732	Shimoiget ...	Vancouver, B.C..	1913 Vancouver, B.C. ...	67 6	14 6	5 8	43	29	4 " "	Packers Steamship Co., Vancouver, B.C.
130511	Sissiboo	Weymouth, N.S..	1913 Little River, N.S. ..	66 0	16 0	6 9	61	29	17 " "	B. H. Morehouse, Sandy Cove, N.S.
133842	Thornieta ...	Vancouver, B.C	1912 Seattle, Wash	44 0	8 5	3 6	14	10	4 2-5" "	Port Moody Investments, Vancouver, B.C.
133733	Vireve	"	1913 Vancouver, B.C. ...	31 7	8 3	3 0	7	5	1 " "	A. Marshall and W. R. Spencer, Vancouver, B.C.

(a) formerly, Union. (b) formerly, Pacific (c) formerly, Charles F Dunbar (d) formerly, Hiawatha (e) formerly, Iron King (f) formerly, Neptune (g) formerly, Galveston. (h) formerly, Vigilante. (j) formerly Wm. G. Small. (k) formerly, Britannic. (1) Owners, Canada Interlake Line, Ltd., Toronto.

The Dominion Wreck Commissioner's Judgment in the Royal George Wreck.

The British Board of Trade has allowed the appeal of Capt. Harrison, who was master, Canadian Northern Steamships s.s. Royal George, which ran ashore in the St. Lawrence River last fall, and has restored his certificate. The full report of the judgment, giving the grounds on which the Dominion Wreck Commissioner's judgment was reversed, had not been received up to the time of going to press, but Capt. Harrison is reported to have said that he can claim command of the vessel and his salary from the time of the stranding. Enquiry at the Canadian Northern headquarters in Toronto elicits the information that Capt. Harrison will not be reappointed to the company's service.

Until the complete judgment is received, comment is reserved, but as there is some misapprehension on the matter, it may be mentioned that Capt. Harrison holds a British Board of Trade certificate, and in the Shipping Casualties Act regarding such investigations, it is provided where a certificate issued by the Board of Trade has been cancelled or suspended, it shall be forwarded, with the report and evidence, to the Board of Trade in London.

The Journal of Commerce, Liverpool, Eng., in commenting on the result of the appeal, recently said:—"Apparently, when an accident befalls a ship in Canadian waters the Government regards the investigation which follows as a sort of prosecution, the unhappy officers being subjected to a close and searching cross examination on every detail, the obvious aim of the Government being to convict the unfortunate mariner of culpable negligence or recklessness. It has been suggested that this line has been taken in order to divert attention from the manifest, and, in many cases, preventable difficulties of the St. Lawrence navigation, captains and officers generally, in spite of the efforts of the Dominion Government being still of the same mind as underwriters, that much yet remains to be done before the passage of a vessel through this waterway can be regarded as a normal and ordinary journey."

The writer of the article above quoted from the Journal of Commerce is either lamentably ignorant of the facts, and therefore incompetent to express an opinion, or else he is blinded by insular prejudice or some other cause. His charge as to the way in which marine investigations are conducted in Canada is utterly without [illegible] vessels get into trouble are closely and searchingly examined in order to bring out the facts, but they have every opportunity to defend themselves and can be represented by counsel. The charge that the Government's aim is to convict captains of culpable negligence, or recklessness, is absolutely false and mendacious, and the suggestion that this is done to divert attention from alleged difficulties of the route is equally foundationless. Further comment is reserved until the full text of the Board of Trade's decision is received. In the meantime it may, however, be pointed out that representatives of that body, who probably have never seen the St. Lawrence and know nothing about it, are hardly likely to be accepted, at least in Canada, as any better authorities than Canadian officials who thoroughly know the route.

The Richelieu and Ontario Navigation Company's Provincial Advisory Boards.

Canadian Railway and Marine World for March contained a list of the R. & O.N. Co.'s directors, with the statement that two advisory boards would be appointed, to act respectively for the company in Ontario and Quebec. We have been officially advised that the following have been appointed:

QUEBEC ADVISORY BOARD. W. Molson Macpherson, Chairman; P. Galibert, F. Carrell, Sir George Garneau.

ONTARIO ADVISORY BOARD.—Sir Henry M. Pellatt, Chairman; J. P. Steedman, T. P. Phelan, A. E. Dyment.

Following are the directors of two of the subsidiary companies:

NORTHERN NAVIGATION CO.—President, Jas. Playfair; Vice Presidents, J. R. Binning and W. E. Davis (since deceased); other directors, Jas. Carruthers, J. E. Dalrymple, H. B. Smith, F. Pardee, W. J. Shepherd, E. Bristol, M.P.; F. A. Magee, H. H. Gildersleeve and H. W. Richardson; Manager, P. Paton; Secretary, F. A. Magee; Treasurer, C. A. Macdonald, formerly Assistant Manager, which position has been abolished.

NIAGARA NAVIGATION CO.—President, Sir Henry M. Pellatt; Vice President, Jas. Carruthers; other directors, Jas. Playfair, J. R. Binning, J. P. Steedman, H. B. Smith and W. D. Matthews; Comptroller and Treasurer, J. I. Hobson; Secretary, F. P. Smith.

The Cunard Steamship Co. has declared a dividend of 10% for 1912, as against 7½% for 1911, and 5% for 1910.

Atlantic and Pacific Ocean Marine.

The wireless telegraph station at Cape Race, was destroyed by fire, May 5. The loss is estimated at $10,000.

C. A. Lewthwaite has been appointed Travelling Passenger Agent for the Allan Line Steamship Co., with headquarters at Winnipeg, vice J. F. Pratt.

The Hamburg-American Line s.s. Sithonia arrived at Vancouver, May 5, from Europe, via the Suez Canal, inaugurating a new service with the Pacific coast.

The Dominion Lighthouse Board is considering the question of adopting, on the suggestion of the Shipping Federation of Canada, a new lighting of the ship channel in the St. Lawrence, having red lights on one side and white lights on the other

Shipping reports from the Pacific coast, state that for the year ended Mar. 31, 11,407 vessels, with a registered tonnage of 9,046,115, berthed at Victoria, B.C., showing an increase of 1,700 vessels and 2,000,000 tons over the previous year.

The enquiry into the recent collision of Furness, Withy and Co.'s s.s. Chiltern Range with an iceberg, was opened at Montreal, May 14. It was decided that as the vessel had sustained no material damage, and for other reasons of policy, to adjourn the enquiry indefinitely

On the introduction of the bill, in the House of Commons recently, for the incorporation of the Vancouver Harbor Commissioners, it was stated that 8 monthly ocean steamship services, 1 bi-monthly, 1 tri-weekly, 2 bi-weekly, and 1 weekly, are being operated out of Vancouver.

A Montreal press dispatch states that the Italia Co., and the Navigazione Generale Italiana, will inaugurate a double steamship service between Italy and Canada during this season, the former company making Halifax and Boston its ports, and the latter Quebec and Montreal. Both companies are allied with the Hamburg-American Line.

The operation of a steamship service between Victoria, Vancouver and Salina Cruz, Mexico, which has been undertaken intermittently by various companies, has again been started. The first vessel on the new service arrived at B.C. ports recently, from Salina Cruz. The line is under the management of W. R. Grace and Co., who have chartered the Norwegian s.s. Thode Fagelund, and who anticipate putting on a regular monthly service.

Referring to the published statements that the new Atlantic mail service agree-

List of Sailing Vessels and Barges Registered in Canada during April, 1913.

No.	Name	Port of Registry	Rig	When and Where Built		Length	Breadth	Depth	Reg. Tons	Owner or Managing Owner
[illegible]	A. L. No. 1 ...	[illegible]	[illegible]	[illegible]	Pierreville, Que..	108 5	[illegible]	8 0	157	A. Laperriere, Pierreville, Que.
[illegible]	[illegible]	Vancouver, B.C. ...	[illegible]	[illegible]	Vancouver, B.C..	70 0	30 0	7 5	152	W. W. White, Vancouver, B.C.
[illegible]	[illegible]	Lunenburg, N.S. ..	[illegible]	1913	[illegible], N.S.	[illegible]	[illegible]	10 4	97	H. Adams, M.O., Lunenburg, N.S.
[illegible]	[illegible]	Vancouver, B.C. ...	[illegible]	[illegible]	Eureka, Cal. ...	[illegible]	36 5	11 8	399	Coastwise St. & Barge Co., Vancouver, B.C.
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	21 4	8 5	198	W. O. Stobo, Quebec, Que.
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Lunenburg, N.S.	[illegible]	26 3	10 4	95	H. Cook, M.O., Rose Bay, N.S.
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Shelburne, N.S..	[illegible]	[illegible]	8 0	56	W. G. Richards, Grand River, P.E.I.
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Duluth, Minn. .	100 0	31 3	6 7	383	[illegible], Sault Ste. Marie, Ont.
[illegible]	[illegible]	[illegible]	[illegible]	1896	[illegible] ...	168 2	[illegible]	[illegible]	[illegible]	Minister of Marine and Fisheries, Ottawa.
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	" " ...	149 7	32 3	11 8	580	" " " "
[illegible]	[illegible]	[illegible]	[illegible]	1900	" " ...	[illegible]	[illegible]	12 9	[illegible]	" " " "
[illegible]	[illegible]	[illegible]	[illegible]	1901	" "	[illegible]	[illegible]	12 8	520	" " " "
[illegible]	[illegible]	[illegible]	[illegible]	1902	" "	177 1	34 5	[illegible]	[illegible]	" " " "
[illegible]	McDougald (b).	[illegible]	[illegible]		[illegible]	114 6	40 3	[illegible]	[illegible]	Norton Griffiths Dredging Co., Montreal
[illegible]	McMartin (c) ..	[illegible]	[illegible]			229 7	[illegible]	[illegible]	[illegible]	" " " "
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Allendale, N.S. .	89 7	[illegible]	[illegible]	79	J. B. Foote, Grand Bank, Nfld.
[illegible]	[illegible]	Lunenburg, N.S. ..	[illegible]	1912	[illegible]	[illegible]	[illegible]	[illegible]	98	J. Backman, M.O., LaHave, N.S.
[illegible]	[illegible]	Ottawa	[illegible]	1913	[illegible]	[illegible]	24 2	7 8	179	Ottawa Transportation Co., Ottawa
[illegible]	[illegible]	[illegible]	[illegible]	1913	Mahone Bay, N.S.	[illegible]	[illegible]	10 4	91	W. Ernst, M.O., Mahone Bay, N.S.
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	26 2	10 4	99	W. Duff, M.O., Lunenburg, N.S.
[illegible]	W. T. White ...	[illegible]	[illegible]	[illegible]	LaHave, N.S. ..	104 0	[illegible]	10 4	99	L. Knock, M.O., Rose Bay, N.S.

[illegible] formerly, Denver.

ment with the Dominion Government provided for the construction of ships capable of being used as mail steamships in peace and armed cruisers in war, Sir Thomas Shaughnessy is reported to have said recently in England: "This is all mere speculation or an attempt at intelligent anticipation of some possible future scheme. As this contract is for one year only, it must be obvious that nothing so costly and comprehensive as a fleet of mail steamships armored and equipped for use as war cruisers and forming a part of a scheme of Imperial naval defence for the North Atlantic, can be embraced within that agreement. It is only a mail contract."

Maritime Provinces and Newfoundland.

The Fredericton Steamship Co., Ltd., application for the incorporation of which was announced in our last issue, has been incorporated, with $5,000 capital, and office at Fredericton, N.B.

Permission has been granted to change the names of the following steamboats:—W. G. Small, no. 133,753, registered at St. John, N.B., to Pluvia; and Charles F. Dunbar, no. 131,010, registered at St. John, N.B., to Betty D.

The British s.s. Glace Bay, under charter to the Dominion Iron and Steel Co., ran ashore during a fog, near Cape Race, May 3, while on her way in ballast, from Sydney, N.S., to Wabana, Nfld., for ore, and became a total loss.

E. Fleming has been appointed agent for the Eastern Steamship Co., at St. John, N.B. He was in the company's service for several years at Boston, Mass., but latterly has been in the steamship business at St. John, where his father is harbor master.

The steam tug G. S. Mayes was launched recently at St. John, N.B. Her dimensions are, length 92 ft., depth 22 ft., depth 11 ft. She is to be equipped with machinery taken from the steam tug Dirigo, which is also owned by G. S. Mayes, St. John.

The Crystal Stream Steamship Co., St. John, N.B., has appointed F. S. Mabee and J. Williams, as captain and chief engineer, respectively, of its steamboat D. J. Purdy; and B. Dykeman and G. Blewett, as captain and chief engineer, respectively, of its steamboat Majestic, for this season.

Burton Stewart, Manager for Norton Griffiths and Co., St. John, N.B., is visiting London, Eng., to confer with the head officials with regard to the season's plans for work in Canada. It is reported that a Canadian board will be appointed for the company. The chief work in hand is the Courtenay Bay development in St. John harbor.

The Department of Marine has awarded the contract for the construction of a first class single screw steel steam lightship to be delivered at Halifax, N.S., to Bow McLachlan and Co., Paisley, Scotland, for $127,384. The chief dimensions will be:—Length between perpendiculars, 114 ft.; breadth, moulded, 29 ft.; depth, moulded, 14 ft. 8 ins.

The Nova Scotia Steel and Coal Co., New Glasgow, N.S., has chartered, for 10 years, the steamships Wagama and Wascana, just built on the Tyne, Eng. They are built on the cantilever principle with clear holds, free from beams, pillars and other obstructions, and have five very large hatches for the rapid loading and discharge and the minimizing of any trimming of coal or ore cargoes. Their dimensions are, approximately:—Length, 380 ft.; beam, 52¼ ft.; moulded depth, 30 ft.; deadweight capacity, 8,000 tons. The Wagama will be operated between Wabana, Nfld., and North Sydney, N.S., and between North Sydney and Montreal in the ore and coal trades respectively. The Wascana is expected to arrive on this side July 1 for similar purposes.

At a public meeting at St. John, N.B., recently, to consider the question of urging the more rapid development and improvement of the harbor facilities at Sand Point, W. Downie, General Superintendent, Atlantic Division, C.P.R., representing the steamship companies, stated that whereas there had been ample accommodation during the first part of the season, considerable congestion had occurred towards the close. If the present rate of increase were maintained, the exports and imports at St. John would be doubled in the next five years, and he suggested the erection of grain conveyors by those owning the piers, the Government, or by the city, and if by the city, then a charge sufficient to meet interest and sinking fund requirements should be made.

Province of Quebec Marine.

An order in council has been issued amending the rules and regulations for the management and working of the Levis dry dock.

Dredging is in progress at the mouth of the St. Charles River, Quebec, and it is anticipated that sufficient will have been accomplished by the end of the season to allow of the building of 1,000 ft. of the pier wall.

The establishment of a ferry service between Maisonneuve and Longueuil near Montreal is being discussed by the Maisonneuve council, and it is expected that a contract for its operation for 10 years, will be made with the Quebec and Levis Ferry Co.

The Montreal-Valleyfield and Soulanges Navigation Co., Ltd., has been incorporated under the Dominion Companies Act, with $20,000 capital, and office at Lachine, Que., with power to acquire and operate steam and other vessels and conduct a general transportation business in passengers and freight.

The St. Johns and St. Lawrence Co., Ltd., has been incorporated under the Dominion Companies Act, with $20,000 capital and office at St. Johns, Que., to carry on the general business of transportation, except railroading, to carry on a general towing business, and in connection therewith to own and operate steam and other vessels, and build docks, dry docks, harbors, warehouses, etc. The incorporators are, E. Langlois, J. Cartier, J. C. Harbeck, St. Johns, Que.; G. Guillet and A. Thuot, Iberville, Que.

The Lake Champlain and St. Lawrence Ship Canal Co. is applying to the Dominion Parliament to revive its corporate powers, and to extend the time for the building of a canal from the St. Lawrence River, in Chambly County, Que., to the Chambly Canal, or the Richelieu River, of such dimensions as to make it a navigable channel of not less than 80 ft. wide at the bottom, and not less than 9 ft. deep, and the building of railway lines alongside, and wharves, docks, etc., in connection therewith.

During the committee stage of the Quebec Harbor bill, which authorizes the expenditure of over $3,000,000 on harbor improvements, the Minister of Marine stated, recently, that it is expected to have the grain elevator completed by the spring of 1914, and that the proposed terminal facilities will be ready within two years. The elevator will have 1,000,000 bush. capacity. [illegible] dredging plant.

Ontario and the Great Lakes.

The Ontario Car Ferry Co.'s car ferry Ontario No. 1 [illegible] Iron Works, Toronto, recently, for the fitting of [illegible] ing of her engines.

The Quebec Transportation and Forwarding Co.'s steam tug Florence ran aground near Cardinal, in the St. Lawrence River, May 11, and was reported to be on her side and partially filled with water.

The Cleveland and Buffalo Transit Co. announces that it will operate its vessel City of Ohio, which was run between Cleveland and Buffalo last year, between Cleveland and Port Stanley during this season. She is being overhauled and refitted.

Permission has been given for changes of names of the following steamboats, acquired from foreign owners:—Mars, to Martian; Hero, to Hero No. 1; Pioneer, to Natironco; Saturn, to J. Frater Taylor, and Uranus, to W. C. Franz.

The Northern Navigation Co.'s s.s. Noronic, now under construction at Port Arthur, will be launched June 2. She is 385 ft. long with 52 ft. beam, and will have accommodation for 600 passengers. She will be ready for service on the opening of navigation in 1914.

The ice breaking steamboat J. T. Horne was launched at Port Arthur May 9. She is built after the same model as the ice breaker James Whalen, her dimensions being:—Length, 125 ft.; breadth, 28 ft.; depth, 16 ft.; and is owned by James Whalen.

Dredging has been recommenced in Fort William harbor, the season's work comprising the removal of 25 acres of solid earth on the Kaministikwia River, for a turning basin, the deepening and widening of the channel of the Mission and McKellar Rivers, the building of additional slips, etc.

The Cleveland and Buffalo Transit Co.'s s.s. City of Ohio will be placed in service between Port Stanley, Ont., and Cleveland, Ohio, June 19, leaving Port Stanley on Tuesdays, Thursdays and Saturdays at midnight, and Mondays at 1 p.m., in connection with the London and Lake Erie Ry. and Transportation Co.'s electric car service between London, St. Thomas and Port Stanley.

It is announced that a contract has been placed at Port Arthur, by a Montreal transportation company, for the construction of what is termed the largest exclusive bulk freighter ever built in the British Empire. The dimensions given are:—Length, 625 ft. over all, 605 ft. keel, 59 ft. beam, and 32 ft. depth. It is stated that she will be built on the Isherwood system, and will be equipped with triple expansion engines.

With reference to recent press reports to the effect that the Lake Erie and Northern Ry. intends operating a car ferry service between Port Dover, Ont., and Erie, Pa., we are officially advised that the company will come to no decision until it is definitely ascertained what steps the Government will take to make the necessary improvements to the harbor at Port Dover.

H. J. Lamb, of the Public Works Department, is reported to have stated in London, Ont., May 7, that the Government intends to carry out the proposals for the improvement of the harbor at Port Stanley. The work covers the building of a breakwater along the east side of the harbor, about 1,000 ft., and the deepening of the harbor to allow of the admission of vessels drawing 18½ ft.

The s.s. Turret Crown, while down bound with 105,000 bush. of grain, collided with the s.s. William H. Mack, near Whitefish Point during a fog, May 4. She was considerably damaged, [illegible] house to the starboard, but proceeded to Sault Ste Marie, where she was anchored, resting on the bottom in 12 ft. of water, while some temporary repairs were undertaken. She was subsequently lightered of her cargo and proceeded to Collingwood for general repairs.

The Pembroke Transportation Co., Ltd., has been incorporated under the Dominion Companies Act, with $40,000 capital, and office at Pembroke, Ont., to own and operate steam and other vessels for purposes of general transportation, and to carry on the business of general carrier. The incorporators are:—W. L. Hunter, J. C. Hunter, J. W. Smith, W. H. Bromley, E. A. Dunlop, Pembroke; C. L. McCool, Sheen Tp., Que.; M. F. Johnston, C. A. McCool, Ottawa, and T. B. Marion, Des Joachims, Que.

It is announced from Buffalo, N.Y., that the Canadian and Fort Erie Ferry Co., and the American and Canadian Ferry Co., have been formed to operate the ferry service between Buffalo and Fort Erie, in connection with which considerable trouble has been experienced in the past. The Buffalo and Fort Erie Co.'s vessels will, it is said, be taken over and operated. The outcome is more or less a matter of agreement between the Buffalo and Fort Erie Co., the Independent Ferry Co., and the Dominion Minister of Marine, by whom the old license to operate the ferry was revoked.

The Montreal and Lake Erie Steamship Co.'s steamboat City of Montreal, which was recently damaged by fire at Montreal, has been sold to J. H. Hall, Ottawa. She is being thoroughly overhauled and repaired, and will be operated between Montreal and Lake Superior ports, during this season. A. Lefebvre has been appointed captain, and F. E. Hamelin, chief engineer. The City of Montreal was built at Buffalo, N.Y., in 1871, her name then being, China. Her dimensions are, length 220 ft., breadth 32.5 ft., depth 14 ft., tonnage 1,554 gross, 868 register, and she is screw driven, with engine of 80 n.h.p.

A number of reports are current in Montreal and Toronto, as to further absorptions of other large navigation companies by the Richelieu and Ontario Navigation Co. In previous issues of Canadian Railway and Marine World, we have given various details of the general reorganization of the company, its financial and general interests, and connections with the Furness, Withy and Co.'s interests, and the British Maritime Trust Co., from which some idea of its aims with regard to the development of the navigation of Canadian inland waters, may be gathered. Many of the reports are founded on mere conjecture as to what might take place, and others are anticipating events which might follow in the natural course of development.

The St. Lawrence and Chicago Steam Navigation Co.'s s.s. James Carruthers was launched at Collingwood, May 22. Her dimensions are, length over all, 550 ft. 8 ins.; length between perpendiculars, 529 ft.; beam, 58 ft.; moulded depth, 31 ft.; estimated carrying capacity, 15,000 tons, thus making her the largest cargo carrying vessel on the Canadian lakes. She is equipped with triple expansion engines with cylinders 24, 40 and 66 ins. diar., by 42 ins. stroke, supplied with steam by three Scotch boilers, each 13 ft. diar. by 11 ft. long, at 185 lbs. The furnaces, which will be fitted with forced draught, will have a grate area of 45 sq. ft. to each boiler. She is built with side tanks, six compartments, and there are 31 hatches, spaced 12 ft. centres. Miss L. C. Wright, daughter of A. A. Wright, General Manager, St. Lawrence and Chicago Steam Navigation Co., performed the christening ceremony.

British Columbia and Pacific Coast Marine.

The C.P.R. s.s. Princess Victoria resumed her service May 7 after completing her machinery overhaul at Victoria.

The C.P.R. s.s. Tees, which grounded on the mud in Franklin Creek, near Victoria, recently, was released with no damage May 4 and continued on her route.

A press report from Vancouver states that C. H. Nicholson, Manager, G.T. Pacific Coast Steamship Co., is visiting Winnipeg to confer with the management regarding plans for a vessel to be built in readiness for traffic in 1914.

Marine Express, Ltd., has been incorporated under the British Columbia Companies Act, with $100,000 capital, and office at Vancouver, to own and operate steam and other vessels for the transportation of passengers and merchandise.

N. Hardie, heretofore local manager for Dodwell and Co., agents for the Blue Funnel Line, Victoria, B.C., has been appointed in a similar capacity at Vancouver, and has been succeeded at Victoria by H. B. Davenport, heretofore at Tacoma, Wash.

The Lincoln Steamship Co.'s s.s. Ophir was destroyed by fire on the Fraser River, near Ladner, May 9, and six of the crew lost their lives. She was a wooden vessel of about 200 tons deadweight capacity, and was valued at about $24,000.

The Canadian Yukon Navigation Co., Ltd., has been incorporated under the Dominion Companies Act, with a capital of $50,000, and office at Dawson, Yukon, to own and operate steam and other vessels for the conveyance of passengers and merchandise, and to carry on other incidental business. The incorporators include H. Fisher and L. P. Sherwood, barristers, Ottawa.

George Bury, Vice President, C.P.R., is reported to have stated at Vancouver, May 10, that contracts had been placed for the construction of two modern vessels for the coast service. J. W. Troup, Manager, B.C. Coast Service, is in Great Britain dealing with the matter. It is stated that the vessels will be about 5,000 tons, and altogether a distinct advance on any of the present vessels in service on the coast.

The British Columbia Fisheries Co., Prince Rupert, has appointed the following captains and chief engineers for its vessels for this season:—Canada, captain, L. Anderson; chief engineer, E. R. Seater. Gryme, Captain, J. Haans; chief engineer, J. McCubbins. Triumph, captain, J. Marrison; chief engineer, W. Vicars. The s.s. Imbricaria, which has been built in Great Britain for the company, will be put into service as soon as she arrives on the coast.

Sault Ste. Marie Canals Traffic.

[illegible] passed through the Sault Ste. Marie Canals during April 1913.

Articles			Canadian Canal	U.S. Canal	Total
Copper	Eastbound	Short tons		1,053	[illegible]
Grain		Bushels	[illegible]	[illegible]	[illegible]
Building stone		Short tons			
Flour		Barrels	[illegible]	177,250	[illegible]
Iron ore		Short tons	[illegible]	[illegible]	[illegible]
[illegible]					
Lumber		M. ft. b.m.	[illegible]	[illegible]	[illegible]
Silver ore		Short tons			
Wheat		Bushels	[illegible]	[illegible]	[illegible]
General merchandise		Short tons	[illegible]	14,011	16,171
Passengers		Number	[illegible]	1	[illegible]
Coal, hard	Westbound	Short tons		[illegible]	[illegible]
Coal, soft			[illegible]	[illegible]	[illegible]
Flour		Barrels			
Grain		Bushels			
[illegible]		Short tons	[illegible]	[illegible]	[illegible]
[illegible]					
Salt		Barrels	[illegible]	[illegible]	[illegible]
General merchandise		Short tons	[illegible]	[illegible]	[illegible]
Passengers		Number	[illegible]		107
[illegible]		Number	[illegible]	[illegible]	[illegible]
Registered tonnage		Net	[illegible]	[illegible]	[illegible]
Freight—Eastbound		Short tons	[illegible]	[illegible]	[illegible]
Westbound			[illegible]	[illegible]	[illegible]
Total freight			[illegible]	[illegible]	[illegible]

[illegible]

The Ontario and Quebec Navigation Company Changes Hands.

This company has been acquired by Aemilius Jarvis and Co., Toronto. The company was originally incorporated in 1905, with R. B. Hepburn as General Manager, and J. deC. Hepburn as General Freight and Passenger Agent, and with offices at Picton, Ont. Following are the officers and directors of the new company:—President, Albert Oakley; other directors, Aemilius Jarvis, A. D. Morrow, Morgan Jellett, W. J. Chalmers, Toronto, and B. R. Hepburn, M.P., Picton, Ont. Secretary, C. D. Henderson, Toronto.

The vessels which have been taken over are, the steamboats Aberdeen, Alexandria, Aletha, Brockville, Geronia, Lloyd S. Porter, Varuna, and Water Lily; and the barges Isabel Reed and Rob Roy. They will be operated on the same routes and schedules as last year, and J. deC. Hepburn, who has been General Manager of the old company, will continue in that capacity. It would not be at all surprising if the recent transfer of ownership turned out to be a preliminary step to the acquirement of the line by the Richelieu and Ontario Navigation Co.

Canadian Notices to Mariners.

The Department of Marine has issued the following:—

72. Mar. 31. Ontario, Detroit River, Limekiln Crossing channel, south light vessel withdrawn, fog bell discontinued.

73. Mar. 31. United States of America, Detroit River, changes in Grosse Isle south channel range lights.

74. Mar. 31. United States of America, Detroit River, change in Ecorse back range light.

75. Apr. 3. New Brunswick, south coast, Bay of Fundy, off north end of Alum Island, bell buoy to be established.

76. Apr. 3. Nova Scotia, south coast, off entrance to Port Medway, southwest breaker, whistling buoy to be established.

77. Apr. 3. Nova Scotia, south coast, Green Island, intended change in character of light.

78. Apr. 3. Prince Edward Island, south coast, Northumberland Strait, Tryon Shoal, whistling buoy re-established.

79. Apr. 5. Ontario, Detroit River, gas buoy at junction of Ballard Reef and Livingstone Channels, change of light, additional light.

80. Apr. 5. Ontario, River St. Mary, Sault Ste. Marie Canal, channel at lower entrance, gas buoy established.

81. Apr. 12. North Atlantic Ocean, Transatlantic steamship routes, ice patrol service.

82. Apr. 14. Ontario, Lake Ontario, Newcastle harbor, outer portion of east pier together with the lighthouse carried away by a storm, hydrographic notes.

83. Apr. 14. Ontario, Lake Erie, Pelee Passage, southeast shoal lightship, main mast and red ball removed, change in character of light.

84. Apr. 14. United States of America, Niagara River, Tonawanda Channel, Strawberry Island cut, intended changes in buoyage.

85. Apr. 14. United States of America, Detroit River, Bar Point channels, intended changes in buoyage.

86. United States of America, Lake Huron, Sturgeon Point light, characteristic to be changed.

87. Apr. 15. British Columbia, Vancouver Island, west coast, Barkley Sound, eastern channel, Kelp Bay, unchartered rock.

88. Apr. 15. British Columbia, Vancouver Island, east coast, Saanich Inlet, Senanus Island, gas lighted beacon established.

89. Apr. 15. British Columbia, Strait of Georgia, sandheads of Fraser River, new lightship.

90. Apr. 15. British Columbia, Burrard Inlet, Vancouver harbor, Parthia Shoal, dredging completed.

91. Apr. 15. Ontario, Georgian Bay, east side, approach to Parry Sound, Black Rock day beacon blown down, Cameron Island day beacon blown down.

92. Apr. 15. United States of America, Lake Erie, Ashtabula, light established on inner breakwater.

93. Apr. 15. United States of America, St. Clair River, St. Clair Flats canal lower light, change in color of light.

94. Apr. 16. New Brunswick, south coast, Bay of Fundy, Great Salmon River, light established.

95. Apr. 16. Nova Scotia, west coast, Trinity Ledge, bell buoy to be replaced by gas and whistling buoy.

96. Apr. 16. Quebec, Gulf of St. Lawrence, Magdalen Islands, Amherst Island, Pleasant Bay, Amherst wharf, hand fog horn at light station.

97. Apr. 16. Quebec, Gulf of St. Lawrence, Moisie River, change in positions of range lights.

98. Apr. 17. North Atlantic Ocean, ice warnings.

99. Apr. 17. North Atlantic Ocean, caution with regard to ice.

100. Apr. 17. Newfoundland, south coast, Fortune Bay, Garnish, change in character of light.

101. Apr. 17. Newfoundland, south coast, Fortune Bay, Long Harbor Point, lighthouse established.

102. Apr. 19. British Columbia, Canadian list of lights and fog signals, new edition.

103. Apr. 19. British Columbia, Queen Charlotte Islands, Hecate Strait, Skidegate Inlet, off Lawn Point, change in position of gas and whistling buoy, correction.

104. Apr. 22. Nova Scotia, Minas Basin, Avon River, Mitchener Point, light improved.

105. Apr. 22. Nova Scotia, south coast, West Ironbound Island, character of light corrected.

106. Apr. 22. Nova Scotia, south coast, Mahone Bay, Quaker Island, light improved.

107. Apr. 22. Nova Scotia, south coast, Halifax harbor, Herring Cove, light improved.

108. Apr. 22. Nova Scotia, Strait of Northumberland, Pictou harbor, Pictou bar, light improved.

109. Apr. 22. Chart of anchorages in Hudson Strait issued.

110. Apr. 22. Hudson Bay, James Bay, chart of Rupert Bay.

111. Apr. 24. Nova Scotia, Annapolis Basin, Digby pier, intended change in character of light.

112. Apr. 24. Nova Scotia, south coast, Halifax harbor, George Island, intended change in character of light.

113. Apr. 24. Nova Scotia, south coast, Halifax approach, Devil Island, westerly light improved.

114. Apr. 24. Nova Scotia, south coast, Jeddore Rock, intended change in character of light.

115. Apr. 24. Nova Scotia, south coast, Nixonmate shoal bell buoy, change in position.

116. Apr. 24. Nova Scotia, north coast, Northumberland Strait, entrance to Pictou, Skinner Reef, gas buoy replaced by gas and bell buoy.

117. Apr. 26. Quebec, River St. Lawrence below Quebec, Traverse of St. Roch, lower end, position of lightship no. 20.

118. Apr. 26. Quebec, River St. Lawrence below Quebec, Traverse of St. Roch, gas buoy to be established.

119. Apr. 26. Quebec, River St. Lawrence, Channel Patch, change in position of gas and bell buoy.

120. Apr. 29. Ontario, Canadian list of lights and fog signals, new edition.

121. Apr. 29. Ontario, River St. Lawrence, Gananoque, dredging, buoys established.

122. Apr. 29. Ontario, Lake Ontario, Presqu'ile Bay, gas buoy to be established, Salt Reef light to be discontinued.

123. Apr. 29. Ontario, Georgian Bay, French River, front range lighthouse blown down, temporary light.

124. May 2. Nova Scotia, south coast, Lockeport, Laurier Rock, bell buoy to be replaced by gas and bell buoy.

125. May 2. Prince Edward Island, south coast, Northumberland Strait, Hillsborough Bay, Prim Reefs gas and whistling buoy, amended position.

126. May 2. Prince Edward Island, south coast, Northumberland Strait, Bedeque Bay, Summerside, dredging, front range light removed.

127. May 2. Quebec, Gulf of St. Lawrence, off Fame Point, experimental submarine bell buoy withdrawn.

128. May 2. Quebec, River St. Lawrence, Manikuagan Shoal, whistling buoy replaced by gas and bell buoy.

129. May 2. England, south coast, Plymouth Sound, dredging in progress.

130. May 2. Ontario, Lake Huron, north channel, Little Current, bridge under construction, temporary light.

131. May 6. British Columbia, Vancouver Island, Quatsino Sound, Bergh Cove, buoy established.

132. May 6. British Columbia, Burrard Inlet, English Bay, False Creek, change in position of lights.

133. May 6. Japan, Sanuki Province, Shodo-shima, Okadobana, lighthouse established.

134. May 7. Nova Scotia, south coast, La Have gas and bell buoy to be replaced with gas and whistling buoy.

135. May 7. Nova Scotia, south coast, entrance to Halifax harbor, Sambro Outer Bank, lightship removed, gas and whistling buoy replaced in position.

136. May 7. Nova Scotia, south coast, Halifax approach, change in color of Devil Island westerly lighthouse.

137. May 7. Prince Edward Island, north coast, Malpeque harbor, Fish Island main light, illuminating apparatus.

The Richelieu and Ontario Navigation Co.'s New Incorporation.

Full particulars of the charter obtained by the Richelieu and Ontario Navigation Co., Ltd., were given in our last issue. The following circular, explaining the change, was sent to the shareholders of the original company, the Richelieu and Ontario Navigation Co., over the signature of the President, Jas. Carruthers:—

"Your directors have for some time past had under consideration the advisability of putting the company on the same footing and on a line with the other large navigation, transportation and commercial corporations carrying on business in Canada, by adopting their common charter and securing for the company the general privileges and advantages enjoyed by companies incorporated under ordinary letters patent of the Dominion. The charter under which the company has conducted its operations since its organization in 1857 was long ago found altogether inadequate to meet the company's growing requirements, with the result that the company has very frequently of late years been put to the trouble, delay and expense of applying to Parliament for further powers. With a view to avoiding these difficulties in the future, your directors have decided, upon the advice of eminent counsel, that the time has come when the company should be put under the general law of the country, and have entered into an agreement with the Richelieu and Ontario Navigation Co., Ltd., for the union, amalgamation and consolidation of the stock, franchises and undertaking of the company with the stock, franchises and undertaking of the Richelieu and Ontario Navigation Co., Ltd., a company incorporated under letters patent of the Dominion, with an authorized capital of $15,000,000 divided into shares of $100 each. The issued and outstanding capital of your company now amounts to $10,000,000, and a like amount of capital will be at once issued by the new company, and the consolidation effected by an exchange of shares, share for share, the balance of the authorized capital remaining in the treasury for future requirements. The new company will take over the assets and liabilities of your company as a going concern, and your directors are convinced that this consolidation is in the best interests of the company."

Furness, Withy & Co.'s Interests in Canada

A prospectus which was issued some little time ago in England by the British Marine Trust, Limited, offering shares and debentures for subscription contains some interesting information as to the company's operations in Canada, which is extracted as follows:—

The company was originally established in 1888 to carry on such business as is ordinarily transacted by a trust and mortgage company. In 1896 Furness, Withy & Co., Ltd., acquired a controlling interest in the undertaking, and in the following year the name was changed from the British Maritime Mortgage Trust, Ltd., to the British Maritime Trust, Ltd.

As the vast developments in Canada have led to a large demand for capital, the board has been directing its attention for some time past to the Dominion as a promising field for extending the business of the Trust. Through its association with Furness Withy & Co., the Trust commands an excellent Canadian organization of long-standing in touch with projected enterprises of every kind, and in a position to gain at first hand all essential information relating thereto, thereby ensuring prudent selections for investment. As a further aid in dealing with proposals from the Dominion, the directors have retained the services of a Canadian adviser who has taken up residence in London. With so many projects being thrust upon the market, they realize the need for great care in the selection of companies and properties for investment purposes, and this has led them to adopt the precaution of placing reliable expert advisers permanently [illegible] closely examining into the nature, scope and prospects of such enterprises as are submitted to them from time to time. The soundness of an undertaking and the responsibility of [illegible] considerations in regard both to the security of capital and its earning capacity.

The directors of the Trust are nominees of Furness, Withy & Co., who hold the controlling interest in the undertaking.

The directors have conducted an important series of investigations and negotiations into a number of highly promising companies, among which are the following:—

A substantial holding in the old established business of the Richelieu and Ontario Navigation Co., representing approximately 12,000 shares of $100 each. It is paying quarterly dividends at the rate of 8% per annum. Besides owning a fleet of steamboats its properties comprise offices, shipyards, workshops, warehouses, docks, sheds, wharves, pontoons, hotels, cottages, etc., covering about 150 acres in all, and situate at Montreal, Sorel, Three Rivers, Quebec, Murray Bay, Tadousac, [illegible], etc. In this already large undertaking there has now been merged the Northern Navigation Co., with its fleet and valuable properties at Collingwood, Sault Ste. Marie, [illegible] the Inland Lines, Limited, with its steamers, and other related interests. The entire [illegible] recent acquisitions includes the Niagara [illegible] steamers, by far the most extensive trans-[illegible]

Valuable freehold properties in the best business and commercial districts of Mont-[illegible] valuable asset in connection with the shipping development of that port consequent upon the opening of the Panama Canal, but which, if acquired on the terms proposed, should represent a considerable increment of value as real estate.

Vessels Removed From Register.

The following vessels were removed from the register, between Jan. 1 and Mar. 31, for the reasons assigned:—

Steam:—Archie, Vancouver, B.C., 11 tons, broken up; Beaver, Vancouver, B.C., 2 tons, broken up; Brant, Vancouver, B.C., 13 tons, broken up; Ella Ross, Deseronto, Ont., 125 tons, burnt; Empress, Vancouver, B.C., 2 tons, broken up; Gertrude M., Yarmouth, N.S., 25 tons, burnt and condemned; Nereid, St. John, N.B., 20 tons, broken up; Nidge, Vancouver, B.C., 39 tons, wrecked; Oscar, Victoria, B.C., 61 tons, burnt; Swastika, Kingston, Ont., 6 tons, sold to foreigners; Uncle Tom, Port Stanley, Ont., 3 tons, broken up.

SAILING:—A.L.B., Lunenburg, N.S., 22 tons, broken up; Aldine, Lunenburg, N.S., 99 tons, stranded; Alexander, Sydney, N.S., 78 tons, broken up; Alexander Black, Dorchester, N.B., 575 tons, abandoned at sea; Amateur, Victoria, B.C., 18 tons, sunk; Arthur H. Wright, Lunenburg, N.S., 99 tons, transferred to Newfoundland; Bess, Digby, N.S., 24 tons, wrecked; Cape Beale, Victoria, B.C., 13 tons, wrecked; Carrie A., Sydney, N.S., 73 tons, wrecked; Chachee-[illegible], B.C., 10 tons, wrecked; Clayola, Windsor, N.S., 123 tons, lost; Cluaran Beag, Sydney, N.S., 18 tons, broken up; Columbia, Yarmouth, N.S., 22 tons, sold to foreigners; Coup d'Etat, Yarmouth, N.S., 12 tons, broken up; Echo, Victoria, B.C., 24 tons, abandoned; Florence E. Getson, Lunenburg, N.S., 99 tons, foundered; Forest, Flower, Yarmouth, N.S., 26 tons, burnt; Frank Newton, Sydney, N.S., 40 tons, broken up; Freddie M., Yarmouth, N.S., 10 tons, broken up; G. P. Taylor, Yarmouth, N.S., 13 tons, lost; George Killam, Digby, N.S., 30 tons, sunk in collision; Henry G. Ives, Pictou, N.S., 88 tons broken up; Hustler, Barrington, N.S., 39 tons, wrecked; Lady Bourque, Yarmouth, N.S., 11 tons, broken up; Lila D. Young, Lunenburg, N.S., 10 tons, transferred to Newfoundland; Lila B. Hirtle, Lunenburg, N.S., 99 tons, transferred to Newfoundland; Lilly Dale, Yarmouth, N.S., 11 tons, broken up; Lorena Jane, Windsor, N.S., 11 tons, broken up; Lottie, Yarmouth, N.S., 12 tons, lost; M. T. Williams, Sydney, N.S., 16 tons, transferred to Newfoundland; Maggie Bell, Barrington, N.S., 46 tons, dismantled; Martha Ella, Yarmouth, N.S., 13 tons, broken up; Mary H., Yarmouth, N.S., 28 tons, broken up; Muriel M. Richard, Lunenburg, N.S., 97 tons, foundered; Nellie H. Ham, Barrington, N.S., 26 tons, broken up; Nellie Myrtle, Digby, N.S., 11 tons, broken up; Nita M. Conrad, Lunenburg, N.S., 91 tons, transferred to New foundland; Nokomis, Yarmouth, N.S., 67 tons, lost; P. B. Locke, Toronto, 305 tons, lost; Primrose, Yarmouth, N.S., 34 tons, broken up; Prince, Yarmouth, N.S., 10 tons, broken up; S. A. Crowell, Yarmouth, N.S., 23 tons, broken up; S. C. Hood, Yarmouth, N.S., 12 tons, broken up; St. Croix, Windsor, N.S., 653 tons, sold to foreigners; Ste. Anne, Barrington, N.S., 11 tons, wrecked; Ste. Celestine, Quebec, Que., 53 tons, lost; Sea Slipper, Charlottetown, P.E.I., 41 tons, sank; Sigefroi, Yarmouth, N.S., 41 tons, wrecked; Stella Maud, St. John, N.B., 99 tons, wrecked; Theresa, Victoria, B.C., 63 tons, sold to foreigners; Thrush, Yarmouth, N.S., 13 tons, broken up; Togo, Winnipeg, 58 tons, burnt; True Blue, Yarmouth, N.S., 8 tons, broken up; Ungava, Lunenburg, N.S., 88 tons, transferred to Newfoundland; Unity, Pictou, N. S., 246 tons, transferred to Barbados; Yamaska, Lunenburg, N.S., 98 tons, transferred to Newfoundland.

The Canada-West Indies Steamship Service.

On the third reading of the bill dealing with the reciprocal trade agreement with the British West Indies, in the House of Commons, recently, the acting Minister of Trade and Commerce stated that in response to advertisements for tenders published some time ago, for a service between Canadian ports and the West Indies, several tenders were received, but they were all unsatisfactory. The Royal Mail Steamship Co. tendered for a fortnightly service in return for a subsidy of $200,000 a year, with the stipulation that it could discontinue at the end of a year if the results were not satisfactory. The Canada West Indies Co. offered to provide a service for 15 years, for a subsidy of $300,000, and an additional $130,000 a year from the West Indies and British Guiana. The company also made it a condition that its vessels call at Boston, Mass., but as exception was taken to this, it was withdrawn.

This latter company is not, as reported, a subsidiary of the C.P.R., though there are some C.P.R. people connected with it. Under these circumstances the Government had entered into a contract for one year, to June 30, 1914, with Pickford and Black, Halifax, N.S., for a 12 day service with the West Indies. The contractors have undertaken to join with other people in the contract, and one of the firm had left for Great Britain to make the necessary arrangements. Four boats are to be utilized, two of which are in the present service, for which a subsidy of $50,000 a year will be paid, and two new vessels of 4,500 gross tons are to be supplied, for which a subsidy of $150,000 a year will be paid. These vessels are to be capable to giving a 12 knot service, and will have accommodation for 50 first class, 40 second class and 200 third class passengers. It is reported from England that no vessels have been chartered from the Royal Mail Steam Packet Co.

Richelieu and Ontario Navigation Co.'s Shareholders

The largest holder of R. and O. N. Co.'s stock is the British Maritime Trust Co., London, Eng., which has 11,891 shares. The following are among the other prominent holders with their respective number of shares:—Jas. Carruthers, Montreal, 600; F. A. Magee, Hamilton, Ont., 310; J. W. McConnell, Montreal, 1,675; Sir Henry M. Pellatt, Toronto, 528; T. P. Phelan, Toronto, 1,000; Jas. Playfair, Midland, Ont., 2,728; J. S. Playfair, Toronto, 500; H. Richardson, Kingston, Ont., 1,502; A. H. Sims, Montreal, 1,000; H. B. Smith, Owen Sound, Ont., 400; W. Southam, Hamilton, Ont., 290; Southam Ltd., Hamilton, Ont., 1,139; J. P. Steedman, Hamilton, Ont., 1,053; W. Wainwright, Montreal, 256; Walton and Magee, Hamilton, Ont., 1,150. Banks, trust companies and brokers who have stock standing in their names are not included in this list, as such stock is in almost all cases held as collateral against advances.

The Department of Railways and Canals received tenders Apr. 16, for the construction of a steel tug boat, to be delivered at either Quebec, Montreal, St. John, Halifax or Sydney, by Sept. 1.

Canadian Railway and Marine World.

July, 1913.

The June Railway Mechanical Conventions at Atlantic City.

The two great railway conventions of the year, the American Railway Master Mechanics' Association, and the Master Car Builders' Association, were held at Atlantic City, N.J., the former on June 11 to 13, and the latter on June 16 to 18. The most important features of these annual conventions are the reports of the standing and special committees and the individual papers presented, the principal ones of which are given on this and following pages, either in full or in abstract.

Individual Paper on Tests of Superheater Locomotives.

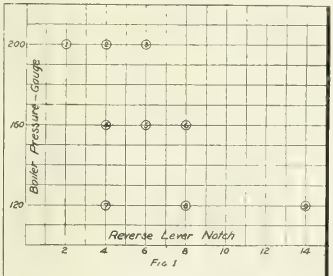
By C. H. Benjamin, Dean of Purdue University, Lafayette, Ind.

The work done by the author reported to the Association in 1911, showed a comparison of locomotive performance under different degrees of superheated steam. The Schmidt superheater was the last one which was installed. The work this year is a continuation of that accomplished upon the Schmidt superheater and shows the increased power of the superheater locomotive over the ordinary locomotive when both are using the same amount of coal. Last year a brief statement of the progress of the work was made, but no definite results were given. It was stated at that time that plans were under way to get a larger set of cylinders for the Purdue locomotive. This, however, was not done, and so the report this year only gives the increased power produced by superheating with the same sized cylinder. The work as outlined for the use of large cylinders remains yet to be carried out at a future time.

EQUIPMENT.—The locomotive known as Schenectady no. 2, for the saturated tests, and no. 3, for the superheated tests, was used in all the work. When used with saturated steam the locomotive was in normal condition. When the Schmidt superheater was installed the number of small 2 inch flues was reduced from 200 to 107, and 21 large 5 inch flues were installed. The original water-heating surface in Schenectady no. 2 was 1,322 sq. ft. The change in the flues made necessary by the installation of the Schmidt superheater reduced the water-heating surface to 1,080 sq. ft. The heating surface of the Schmidt superheater is 324 sq. ft., making a total water and superheating surface of 1,404 sq. ft. for Schenectady no. 3 after it was equipped with the Schmidt superheater. The nominal dimensions of Schenectady no. 3 as used in the tests with the Schmidt superheater installed are as follows:—

Type	4-4-0
Total weight (lbs.), about	109,000
Weight on four drives (lbs.), about	61,000
Driving-axle journals:	
Diameter (inches)	7½
Length (inches)	8½
Drivers, diameter (inches)	68.99
Valves (type, Richardson balanced):	
Maximum travel (inches)	6
Outside lap (inches)	1⅛
Inside lap (inches)	0
Ports:	
Length (inches)	12
Width of steam port (inches)	1.5
Width of exhaust port (inches)	3
Total wheel base (feet)	23
Rigid wheel base (feet)	8.5
Cylinders:	
Diameter (inches)	16
Stroke (inches)	24
Boiler (style, extended wagon top):	
Diameter of front end (inches)	52
Number of 2 inch flues	107
Number of 5 inch flues	21
Length of flues (feet)	11.5
Heating surface in flues (sq. ft.)	956.5
Heating surface in fire box (sq. ft.)	123.5
Total water heating surface (sq. ft.)	1080.0
Length of fire box (inches)	72.06
Width of fire box (inches)	34.25
Depth of fire box (inches)	79
Grate area (sq. ft.)	17
Thickness of crown sheet (inches)	7-16
Thickness of tube sheet (inches)	9-16
Thickness of side and back sheet (inches)	⅜
Diameter of stay bolts (inches)	1
Diameter of radial stays (inches)	1⅛

The Schmidt superheater, as used in these experiments, has the following dimensions:—



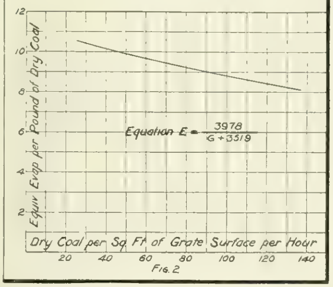


Fig. 1.—Conditions of Pressure and Cutoff for Saturated Steam Locomotive.

Fig. 2.—Relation Between Equivalent Evaporation per Pound of Dry Coal, and Dry Coal per sq. ft. of Grate Surface per Hour for Saturated Steam Locomotive.

Outside diameter of superheater tube (inches)	1⅜
Number of double return loops	21
Average length of the pipes in the double return loops. (ft.)	42.88
Total superheating surface, based on the outside surface of the tubes in sq. ft	324

The fuel used in all these tests, both superheated and saturated, was Youghiogheny lump. Repeated analyses of this coal show it to have a very uniform heat value.

Tests Using Saturated Steam.

THE TESTS INVOLVING SATURATED Steam, which were used in this report, were taken directly from tables IV. and V. in the report of Dean Goss to the Association in 1909. All the tests were run at a speed of 30 miles an hour, and steam pressures of 200, 160 and 120 lbs. The conditions of pressure and cut off under which the tests were run are shown diagrammatically in fig. 1. The cut off is determined by the position of the reverse lever in notches. Each circle represents a test, and the number within the circle refers to the laboratory number by which the tests are identified. The results of the tests involving saturated steam are shown in tables I. and II.

PERFORMANCE OF THE BOILER. In the 1909 report of Dean Goss, the relation between the equivalent evaporation per pound of dry coal and the equivalent evaporation per square foot of heating surface per hour for the locomotive using saturated steam is shown by the equation $E = 11.305 = .221 H$, in which E is the equivalent evaporation per pound of dry coal and H is the equivalent evaporation per square foot of heating surface per hour. This equation is assumed to represent the evaporative efficiency of the boiler when operated under saturated steam. In order to obtain the relation between the equivalent evaporation per pound of dry coal and the rate of firing, an equation was obtained in the following manner: Letting G equal the dry coal per square foot of grate surface per hour, 1,322 is the number of square feet of water-heating surface, 17 the number of square feet of grate surface, and H and E the same as above mentioned. Now, from the above values, the following equation is true: $1{,}322 H = 17 E G$, or $H = \dfrac{17 E G}{1{,}322}$

Substituting this value of H in the equation $E = 11.305 - .221 H$, we obtain the equation $E = \dfrac{3{,}978}{G + 351.9}$

This equation gives the relation between equivalent evaporation per pound of dry coal and the dry coal per square foot of grate surface per hour when using saturated steam. The graphical representation of this equation is shown in fig 2.

PERFORMANCE OF ORIGINAL LOCOMOTIVE assuming irregularities to have been eliminated. Table II. shows the performance of the locomotive, assuming irregularities due to boiler performance to to have been eliminated. The results in this table were obtained as follows:

Column XV., which gives equivalent steam supplied to locomotive per hour with feed-water at 60° F., equals pounds of steam supplied to locomotive per hour from original log multiplied by (B. t. u. taken up by each pound of steam minus [60 minus feed-water temperature]) divided by 970.4 (latent heat of evaporation).

Column XVI., which gives the equivalent evaporation per pound of dry coal corrected by equation, was obtained by substituting the values in column VI., table 1, for H in the equation $E = 11,305 — .221 H$.

Column XVII., which gives dry coal fired per hour corrected by equation, equals column XV. divided by column XVI.

Column XVIII., which gives dry coal per square foot of grate surface per hour, equals column XVII. divided by 17 (the number of square feet of grate surface).

Column XIX., which gives dry coal per indicated horse-power per hour, equals column XVII. divided by column X. in table I.

Column XXIV., which gives dynamometer horse-power, equals column X. in table I. minus column XXII. in table II.

Column XXV., which gives the drawbar pull, equals column XXIV. divided by .000547 multiplied by the revolutions per minute, in which .000547 is the tractive horse-power constant of the locomotive.

Column XXVI., which gives the coal per dynamometer horse-power per hour, equals column XVII. divided by column XXIV.

Column XXVII., which gives the equivalent steam per dynamometer horse-power per hour, equals column XV. divided by column XXIV.

Table 1.

Number	Laboratory Symbol	Speed [illegible]	[illegible]	[illegible]	[illegible]	Equiv. Evap. per pound [illegible]	Cut off Per cent of Stroke	M.E.P. pounds per Sq. inch	Indicated Horse Power	Pounds of Steam per I.H.P. Hour	Pounds Coal per I.H.P. Hour	Draw Bar Pull Pounds	Draw Bar Horse Power
I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV
1	30-2-200	300	[illegible]	673	696	982	1419	3758	2669	2701	348	2965	237.4
2	30-4-200	300		652	856		1887	5.69	3571	2570		3847	3074
3	30-6-200	300	980	788	1112	883	2675	6890	4892	2491	340	5380	4301
4	30-4-160	299	519	662	660	989	1784	3839	2721	2686	324	2655	2119
5	30-6-160	300	689	707	875	987	2567	5408	3839	2528	305	3786	3025
6	30-8-160	300		763	1091		3306	6558	4651	2569		5130	4109
7	30-4-120	300	354	508	470	1032	1762	2409	1710	3063	352	1277	1021
8	30-8-120	301	635	676	799	977	3279	4582	3255	2746	332	3369	2695
9	30-14-120	299	1307	835	1399	838	5625	7256	5140	3031	4.28	6258	5006

Column XX., which gives the equivalent steam per indicated horse-power per hour, equals column XV. divided by column X. in table I.

Column XXI., which gives the machine friction in terms of mean effective pressure, was taken from fig. 13, page 158, of the 1909 report of Dean Goss.

Table 2.

Number	Laboratory Symbol	[illegible]	[illegible]	[illegible]	[illegible]	Dry Coal per I.H.P. per Hr	Equiv. Steam per I.H.P. per Hr	Machine-Friction: Mean Effective Pressure	Machine-Friction: Indicated Horse Power	Machine-Friction: Per Cent I.H.P.	Dynamometer Horse Power	Draw Bar Pull	Coal per Dyna Horse-Power per Hr	Equiv Steam per Dyna Horse Power Per Hour
I	II	XV	XVI	XVII	XVIII	XIX	XX	XXI	XXII	XXIII	XXIV	XXV	XXVI	XXVII
1	30-2-200	8768	9219	891	124	331	3260	65	461	171	2228	2760	400	3955
2	30-4-200	11354	9406	1207	710	329	3092	85	604	164	3067	3830	393	3702
3	30-6-200	[illegible]	8550	659	976	339	3000	93	660	135	4232	5290	392	3470
4	30-4-160	[illegible]	[illegible]	893	525	328	3228	85	604	222	2117	2640	422	4150
5	30-6-160	[illegible]	[illegible]	246	733	325	3038	93	660	172	3179	3970	392	3669
6	30-8-160	[illegible]	[illegible]	611	948	346	[illegible]	84	596	128	4054	5070	397	3539
7	30-4-120	6259	10257	511	159	357	3669	85	604	354	1106	1380	552	5668
8	30-8-120	[illegible]	[illegible]	122	660	[illegible]	3280	84	596	183	2659	3320	422	4018
9	30-14-120	8654	9106	2278	340	443	3629	30	213	4.1	4927	6160	462	3786

Column XXII., which gives the machine friction in horse-power, is obtained by using the values of m. e. p. of column XXI. and the speed in revolutions per minute of the individual test, together with the in[illegible] of the locomotive.

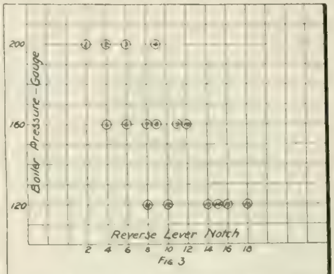
Column XXIII., which gives the machine friction in per cent. of indicated horse-power, equals column XXII. divided by column X. in table I. and multiplied by 100.

Table 3.

Number	Laboratory Symbol	Speed [illegible]	[illegible]	[illegible] Degrees	[illegible]	[illegible]	[illegible] Lb. of dry coal	Cut-off Per cent of Stroke	M.E.P. pounds per sq. in.	Indicated Horse Power	Pounds of Steam per I.H.P. per Hr	Pounds of Coal per I.H.P. per Hr	Draw-Bar Pull	Draw-Bar Horse-Power
I	II	III	IV	V	Va	VI	VII	VIII	IX	X	XI	XII	XIII	XIV
1	30-2-200	300	432	558	1610	608	1040	1787	4142	2902	2130	292	2808	2269
2	30-4-200	[illegible]	[illegible]	622	2220	779	1038	3135	6147	4381	1788	241	4499	3614
3	30-6-200	299	[illegible]	657	2462	920	920	3745	7482	5285	1749	267	5102	4528
4	[illegible]	[illegible]	[illegible]	714	2385	1242	806	4954	9734	6964	1864	311	7454	5967
5	30-4-160	[illegible]	465	579	1616	601	1070	2100	4490	3172	1956	250	3282	2612
6	30-6-160	300	592	609	2263	[illegible]	1020	3000	5530	3940	1877	255	4165	3343
7	30-8-160	300	744	610	2454	888	966	3800	6906	4907	1838	258	5293	4232
8	[illegible]	298	927	627	2103	985	870	4453	7759	5444	1867	290	5543	4378
9	[illegible]	300	1673	682	2531	1170	[illegible]	5240	8690	6151	1915	302	6664	5326
10	30-12-160	289	242	842	2413	1130	818	5682	9341	6435	2009	328	7199	5536
11	[illegible]	[illegible]	596	583	2296	703	977	3893	4759	3432	2130	295	3845	308.8
12	[illegible]	300	550	584	2439	824	974	4413	5937	4197	2014	261	4702	3742
13	[illegible]	[illegible]	969	[illegible]	2771	1086	899	5984	7219	5114	2152	321	5856	4697
14	[illegible]	318	[illegible]	[illegible]	[illegible]	1168	934	6048	7424	5188	2187	320	5288	4413
15	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1171	876	6445	7542	5357	2254	350	6137	4910
16	[illegible]	[illegible]	1217	720	2800	1295	879	7308	7779	5506	2450	376	6342	5054

Tests Using Superheated Steam.

THE TESTS INVOLVING SUPERheated Steam, as run on Schenectady no. 3. were at a speed of 30 miles an hour, at the same pressures as were used on the original locomotive—that is, 200, 160 and 120 lbs. The conditions of pressure and cut off under which the tests were run are shown diagrammatically in fig. 3, in which the cut off is determined by the position of the reverse lever notch. Each circle represents a test, and the number written in the circle represents the laboratory number by which the tests are identified. The results of tests under superheated steam are shown in tables III. and IV. It will be seen that the reverse lever was carried to a higher notch than with



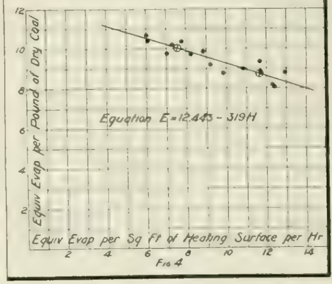
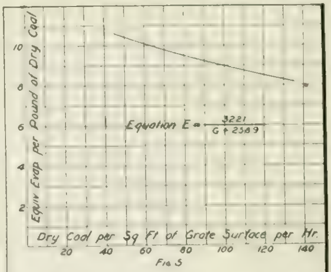


Fig. 3.—Conditions of Pressure and Cutoff for Superheated Steam Locomotive.

Fig. 4.—Relation Between Equivalent Evaporation per Pound of Dry Coal and Equivalent Evaporation per sq. ft. of Heating Surface per Hour for Superheated Steam Locomotive.



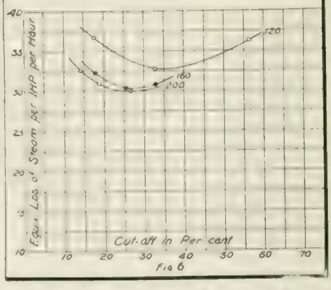


Fig. 5.—Relation Between Equivalent Evaporation per Pound of Dry Coal, and Dry Coal per sq. ft. of Grate Surface per Hour for Superheated Steam Locomotive.

Fig. 6.—Relation Between Equivalent Pounds of steam per i.h.p. Hour and Cutoff for Saturated Steam Locomotive.

the saturated steam.

PERFORMANCE OF THE BOILER.—The equivalent evaporation per square foot of water and superheating surface per hour and the equivalent evaporation per pound of dry coal, columns VI. and VII. in table III., were plotted as shown in fig. 4. There were 16 different tests run under superheated steam, and, as shown, each point represents one test. The equation for the line as shown which most nearly approximates all the points is E = 12.443 — .319 H, where E = the equivalent evaporation per pound of dry coal and H is the equivalent evaporation per square foot of water and superheating surface per hour. The area of the heating surface is based upon the interior surface of the fire box and the exterior surface of the boiler and superheating tubes. This equation was derived from all tests at all pressures and therefore fairly represents the average performance of the boiler at any pressure when operated under superheated steam. It is a noteworthy fact that this equation is practically the same as that obtained from the lower rates of firing reported to the Association in 1911. The equation for the nine points as obtained that year was E = 12.450 — .318 H. In the same manner as used in the original locomotive, G equals the dry coal per sq. ft. of grate surface per hour, 1,404 the number of sq. ft. of water and superheating surface, 17 the number of sq. ft. of grate surface and H and E the same as before mentioned, the following formula is true: 1,404 H = 17 E G, or

$$H = \frac{17\ E\ G}{1,404}$$

Substituting this value of H in the equation E = 12.443 — .319 H, we obtain

[illegible]

the equation $E = \frac{[illegible]}{G + [illegible]}$, which represents the relation between the equivalent evaporation per pound of dry coal and the dry coal per sq. ft. of grate surface per hour when using superheated steam. The graphical representation of this equation is shown in fig. 5.

Table 4.

Number	Laboratory Symbol	Equiv Steam for Engine per Hour [illegible]	Equiv Evap per Pound of Dry Coal [illegible]	Dry Coal Fired per Hour [illegible]	Dry Coal per Sq Ft Grate Surface per Hour Pounds	Dry Coal per I H P per Hr	Equiv Steam per I H P per Hr	Mean Effective Pressure	Indicated Horse Power	Per Cent Cut-off	[illegible]	[illegible]	[illegible]	[illegible]
I	II	XI	XII	XIII	XVIII	XIX	XX	XXI	XXII	XXIII	XXIV	XXV	XXVI	XXVII
1	30—2—200	8397	[illegible]	800	471	2 76	24 94	65	405	16 00	2457	3017	3 28	[illegible]
2	30—4—200	9797	9 96	1073	634	2 46	24 50	85	602	13 70	3779	4726	2 85	[illegible]
3	30—6—200	[illegible]	9 51	1348	792	2 55	24 85	93	652	12 30	4635	5840	2 91	[illegible]
4	30—9—200	17435	8 48	2056	1209	2 35	25 34	77	547	9 90	6417	8018	3 20	27 17
5	30—4—160	8349	10 53	793	466	2 50	26 32	65	457	14 40	2115	3415	2 92	[illegible]
6	30—6—160	10060	10 11	995	585	2 53	26 91	85	602	15 30	3338	4162	2 98	30 14
7	30—8—160	12372	9 61	1287	757	2 62	25 22	93	657	13 40	4250	5320	3 03	29 12
8	30—9—160	13835	9 30	1488	875	2 73	25 41	77	540	9 90	4904	6217	3 03	28 21
9	30—11—160	15424	8 71	1886	1109	3 07	26 70	60	426	6 90	5125	7161	3 29	28 69
10	30—12—160	17272	8 52	2027	1192	3 15	26 84	50	342	5 30	6093	7917	3 33	28 35
11	30—8—120	9932	10 20	974	573	2 84	28 94	84	595	17 30	2836	3533	3 43	35 02
12	30—10—120	11456	9 81	1168	687	2 78	27 30	69	485	11 70	3712	4666	3 15	30 80
13	30—14—120	15183	8 98	1691	995	3 31	29 69	30	212	4 20	4902	6112	3 45	30 98
14	30—15—120	16399	8 72	1881	1106	3 43	29 88	30	222	4 00	5266	6334	3 57	31 14
15	30—16—120	16436	8 71	1887	1110	3 52	30 68	30	213	4 00	5144	6311	3 67	31 95
16	30—18—120	18186	8 31	2188	1287	3 97	33 03	30	212	3 90	5294	8123	4 13	34 35

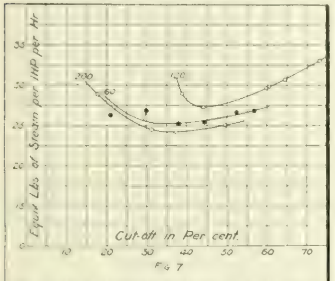


Fig 7

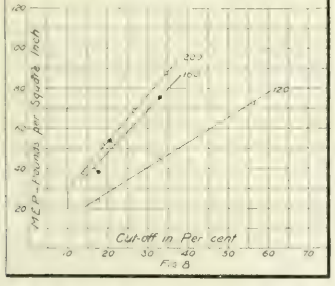


Fig 8

Fig. 7.—Relation Between Equivalent Pounds of Steam per i.h.p. Hour and Cutoff for Superheated Steam Locomotive.

Fig. 8.—Relation Between m.e.p. and Cutoff for Saturated Steam Locomotive.

Table 6.

Superheater Engine 120# Dry Coal Per Sq Ft of Grate Surface per Hour

Steam Pressure	Cut-Off in Percent of Stroke	Equiv Lbs of Steam per IHP per Hr	MEP Pounds per Sq Inch	Cut-Off at Maximum Efficiency	Equiv Lbs of Steam per IHP per Hr at Maximum Efficiency	MEP at Maximum Efficiency	Percent Increase in IHP	Diam of Cyl in inches to give Maximum Efficiency
I	II	III	IV	V	VI	VII	VIII	IX
200	50.9	25.2	96.9	35.0	24.2	70.0	3.97	18.82
160	55.5	26.7	91.5	37 0	25.2	66.7	5.62	18.73
120	65.95	31.1	78.5	44.0	27.3	58 0	12 22	18 62

Table 5.

Dry Coal per Sq ft of Grate Sur per Hour	Steam Pressure	Equiv Evap per Pound of Dry-Coal		Equiv-Pounds of-Steam per-Hour		Cut-Off in Percent		Equiv Pounds of Steam per IHP per Hr		M.E.P Lbs per Sq In		Indicated Horse Power		Percent Increase in IHP
		Sat	Sub	Sat	Sup	Sat	Sub	Sat	Sub	Sat	Sup	Sat	Sup	
I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV
110	200	8 61	8 73	161007	163251	295	481	301	249	753	924	5348	6558	226
110	160	8 61	8 73	161007	163251	323	524	307	264	738	871	5243	6184	180
110	120	8 61	8 73	161007	163251	499	6305	347	303	654	758	4642	5385	160
120	200	8 43	8 50	171972	173400	31.6	509	303	252	800	969	5678	6881	212
120	160	8 43	8 50	171972	173400	343	555	311	267	779	915	5531	6496	175
120	120	8 43	8 50	171972	173400	525	6595	353	311	686	785	4872	5575	144
130	200	8 25	8 28	182325	182988	334.	532	305	255	842	1010	5978	7174	200
130	160	8 25	8 28	182325	182988	360	582	315	271	815	951	5788	6752	167
130	120	8 25	8 28	18232.5	182988	549	687	358	318	717	810	509.2	0153	130

PERFORMANCE OF THE SUPERHEATER Locomotive assuming irregularities to have been eliminated. Table IV. gives the performance of the locomotive when using superheated steam, assuming irregularities to have been eliminated. The results in this table were obtained in exactly the same manner as those from the locomotive when using saturated steam, as shown in table II., and may be compared with them.

The Increase of Power of the Superheater Locomotive.

Having now obtained the values of steam in tables II. and IV. for the two types of locomotives, the curves as shown in figs. 6 to 9 were plotted. By the use of the equations of the curves in figs. 2 and 5, the equivalent pounds of steam per pound of coal can be determined for any rate of firing of either locomotive. Also, from figs. 6 and 7, the equivalent pounds of steam per i. h. p. per hour can be determined for any cut off, and from the lines shown in figs. 8 and 9 the mean effective pressure for any cut off can be ascertained. Now, assuming that the curves as shown in these figures fairly represent the performance of each locomotive, it is possible to obtain the performance of each locomotive at the same rate of firing—that is, burning the same number of pounds of coal per sq. ft. of grate area per hour. Table V. shows this comparison of the two locomotives while burning 110, 120 and 130 lbs. of coal per square foot of grate.

Column I. of this table shows the rate of firing per sq. ft. of grate per hour.

Column II. gives the steam pressure, the comparisons being made at three pressures, namely, 200, 160 and 120.

Column III. gives the equivalent evaporation per pound of dry coal for the original locomotive, and was obtained by substituting the values in col. I for G in the equation

$$E = \frac{3,978}{G + 351.9}$$

Column IV. gives the equivalent evaporation per pound of dry coal for the superheater locomotive, and was obtained by substituting the values in column I for G in the equation

$$E = \frac{3,221}{G + 258.9}$$

Column V. gives the equivalent pounds of steam per hour for the ordinary locomotive, and was obtained by multiplying the values in column I. by those in column III. and then by 17.

Column VI. gives the equivalent pounds of steam per hour for the superheater locomotive, and was obtained by multiplying the values in column I. by those in column IV. and then by the grate area, which is 17 square feet.

Columns VII. to XIV. were obtained [illegible] the method, which is shown by the following example: When using 110 lbs. of coal per square foot of grate area and a steam pressure of 200 lbs., we get [illegible] cut off.

From the curve in fig. 7, 24.9 lbs. of steam per i. h. p. per hour;

From the line in fig. 9, 92.2 lbs. mean effective pressure.

$$\text{Thus, i. h. p.} = \frac{16325.1}{24.9} = 655.6.$$

Also, i. h. p. = 4 (92.2) (.012144) (146.2) = 654.6.

At 48.2% cut off we obtain from the curves in fig. 7 24.9 pounds of steam per i. h. p. per hour, which gives i. h. p. = 655.6. and from the curves in fig. 9 92.7 mean effective pressure, which gives i. h. p. = 658.2.

By looking at the above sets of values, it can be seen that at 48% cut off the i. h. p. figured from the basis of lbs. of steam per i. h. p. is greater than that figured from the basis of the m. e. p., and at 48.2% cut off just the reverse is true Therefore, the proper values must lie somewhere between 48 and 48.2% cut off.

The proper value of 48.1% cut off was found to give the same i. h. p. figured from the pounds of steam per i. h. p. per hour as figured from m. e. p.; that is, with 48.1% cut off, the steam per i. h. p. per hour is 24.9 as obtained from the curve and gives an i. h. p. of 655.6. The m. e. p. at this cut off is 92.4, and gives an i. h. p. of 656.0. These are so near the same that the 655.8 value was taken as the i. h. p. developed while burning 110 lbs. of coal per sq. ft. of grate. The four values mentioned above were used in the tables. The same process was used in determining the values for each line of table V.

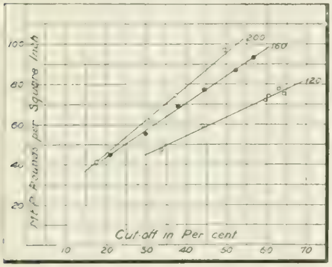


Fig 9.—Relation Between m.e.p. and Cutoff for Superheated Steam Locomotive.

Column XV. of table V., which gives the per cent increase in indicated horse power of the superheater locomotive over the other locomotive, when using the same amount of coal equals column XIV. minus column XIII. divided by column XIII. and multiplied by 100.

Discussion of Results.

INCREASED POWER DUE TO SUPERheating.—It can be seen from column XV., table V., that the increase in power due to superheating when burning from 110 to 130 lbs. of coal per sq. ft. of grate surface per hour, varies from 22.6 to 13.0%. Also from the values in this column it can be seen that for any steam pressure the per cent increase of power decreases as the [illegible]

EFFECT OF INCREASING SIZE of Cylinder for Maximum Power.—By comparing the values of equivalent pounds of steam per i. h. p. per hour it will be seen that they are considerably larger than the best performance of the locomotive as obtained at a lower cut off; that is, the cut off of maximum efficiency for 160 lbs. steam pressure is approximately 37%, while the cut off as obtained under 120 lbs. of coal per hour is 55.5%. The relative steam consumption for these two values of cut off is 25.2 and 26.7 lbs. per i. h. p. per hour, respectively. It will be seen that the increase in power to be accomplished by having the cut off at the proper point to give maximum efficiency is about 5.6% as is shown in column VIII. That is, $\frac{26.7 - 25.2}{26.7} \times 100 = 5.6\%$. In order to show this more clearly, the values in table VI. have been worked out.

Columns I., II., III. and IV. were taken from columns II., VIII., X. and XII., respectively, in table V., at 120 lbs. of dry coal per sq. ft. of grate surface per hour. The values in column V., which give the cut off at maximum efficiency, were taken at the lowest points of the curves in fig. 7. The values in column VI., which give the equivalent pounds of steam per i. h. p. per hour at maximum efficiency, were taken from the curves in fig. 7 at the points of cut off shown in column V. The values in column VII., which give the m. e. p. at maximum efficiency, were taken from the curves in fig. 9 at the points of cut off shown in column V. The values of column VIII., which give the per cent. increase in indicated horse power, equals column III., minus column VI., divided by column III. and multiplied by 100. The values in column IX., which give the diameter by cylinders necessary to obtain maximum efficiency, equal 16 times the square root of values given in column IV., divided by the square root of values given in column VII. The following sample calculation will show this more clearly. The diameter of the cylinders at present is 16 ins. The ratio of this to the new diameter required to give the same indicated horse power must be inversely proportioned to the roots of the mean effective pressures. For 200 lbs. pressure

$$\frac{X}{16} = \frac{\sqrt{96.0}}{\sqrt{70.0}} = \frac{9.86}{8.38}$$

$$X = 18.82$$

where X. is the new diameter of cylinder.

The average of the three values in column IX. is about 18¾ ins. Now, if the locomotive were equipped with 18¾ in. cylinders, when using 120 lbs. of coal per square foot of grate, the cut off could be at the most efficient point to obtain maximum power.

Under these conditions there would be an increase in power as shown in table VII., or, in other words, the increase in power of the superheater locomotive over the other for the 160 and 200 lbs. pressures would be about 25% if the size of the cylinders were increased to 18¾ ins., whereas at present the increase is about 20%.

Table VII., showing the increase of power of the superheater locomotive over the other when using 120 lbs. of coal per sq. ft. of grate per hour if the cylinders were increased to 18¾ ins., is given below.

Steam Pressure	I. H. P. Sat.	I. H. P. Sup.	Per Cent In. in I. H. P.
200	567.8	217.0	26.3
160	553.1	689.0	24.5
120	487.2	636.0	30.0

Report of Committee on Car Construction.

The Master Car Builders' committee, W F. Kiesel, Jr., Assistant Mechanical Engineer, Pennsylvania Rd., chairman, reported as follows:—

The following letter from D. F. Crawford, General Superintendent Motive Power, Pennsylvania Rd., gives the reason for this investigation:—

Prior to the 1911 M.C.B. Code all steel underframe and all steel cars were subjected to the same combinations and the same delivering lines' defects as wooden underframe, composite underframe and all wooden cars were. The consequences were that in interchange defect cards were being requested for damage which in no event would be repaired. In order to correct this situation rule 43 was introduced. The interpretation of this rule is, in effect, that a steel underframe car or an all steel car will not be damaged in fair usage; consequently, the combinations should not apply, and the handling company was made responsible for all damage which necessitated repair, except such damage as might occur through corrosion and weakening of the parts.

"I have been advised that in some of the new all steel and steel underframe equipment which has been constructed recently, that in some instances the centre sill section has been reduced to such an extent that the steel and steel underframe cars are no stronger, if as strong, as the wooden cars, and under rule 43 the owner will receive the same protection as he would if the car had been of proper strength.

"It would seem desirable for the M.C.B. Association to set some minimum strength for steel cars which would adequately protect the handling line, specifying such cross sectional area of centre sill as may be felt to be proper and fair, and cars which have less than this cross sectional area will be considered the same as wooden underframes or composite underframe cars in so far as combination defects are concerned. I would suggest that this may be made one of the subjects for committee work next year, as I do not consider it proper that the burden of maintaining weak cars should be put on the handling line."

The subject has been divided into two parts:—(a) Centre sills for existing cars. (b) Centre sills for new cars.

The only precedent we have is that of wooden cars. The experience with steel and steel underframe cars extends over about 15 years. This experience covers a large number of car types, showing great variations in end strain resisting qualities.

It was agreed that the relative values of steel and wood used in car construction for direct tension or compression should be based on the elastic limits of these materials, and that the committee use a ratio of four for the elastic limit of steel to that of oak or yellow pine.

Compared with a wooden car having two 4 in. by 8 in. centre sills, an equivalent steel car must have an effective centre sill area of not less than 16 sq. ins. between the points where end strain takes effect. The strains in car underframes due to lading do not add greatly to the stresses from end shocks. As a rule, a loaded car is less liable to damage from end strains than an empty car, for which reason it will not be necessary to introduce load strains, but base the minimum area and end resisting strength on end strains only.

Modern steel cars have the centre line of draft at varying distances below (seldom above the horizontal neutral axis of the centre sills, and draft stops located in the centre sills. The distance between the neutral axis of any member of the car and the centre line of strain acts as a lever arm, through which bending effect is added to direct tension or compression. Strains which do not act in line with the neutral axis of car members will be designated "eccentric strains." The ratio of stress to strain is $\frac{1}{A}$ plus $\frac{X}{SM}$, in which

A represents area, in square inches.

X represents lever arm, in inches.

SM represents section modulus of section.

Centre sills which are not properly tied together at rear draft stops, located at some distance from bolster, are subject to eccentric strains, which has a tendency to deflect them outward or away from the centre line of car between draft stops and bolster.

Compression strains acting on car through draft gear, or car ends, as the case may be, create strut action in the members of the car framing. Long struts are liable to buckle under compression, for which reason it is customary to set limits for ratio of length to radius of gyration of struts, in order to restrict the excess stress caused by this buckling tendency. The members or parts of members of car framing which require consideration are generally flanges of channels or I beams, and plates. Their cross sections are rectangular, or sufficiently close to rectangular to be so considered in order to avoid theoretical computations.

Your committee recommends the adoption of a ratio of 70 for length to radius of gyration, which corresponds closely with a ratio of 20 for length to depth d of a rectangular section. This depth must be measured in the direction in which buckling may take place. To fulfill the restrictions just given, the length of a member should not be greater than 20 d., or the member must be securely anchored at intervals not exceeding 20 d.

The [illegible] of centre sills may be [illegible] in various ways, the most [illegible] methods being by means of cover plates, or diagonal braces. The value of such braces increases the value of the centre sills. Cover plates add direct value, and diagonal braces add partial value, depending on their [illegible]. Braces at right angles to centre sills add no value to the centre sill area, unless specifically designed as horizontal girders of sufficient strength to transfer all of the end strains from the draft to the side framing, in which case the side framing must perform [illegible]

[illegible] should be added to the centre sill area, taking [illegible]

RECOMMENDATIONS.—[illegible] strength than that specified below, should be classified with wooden cars, and subject to the same rules for combining defects:—Area of centre sills not less than 16 square inches. Ratio of stress to end strain not more than 0.09. The [illegible]

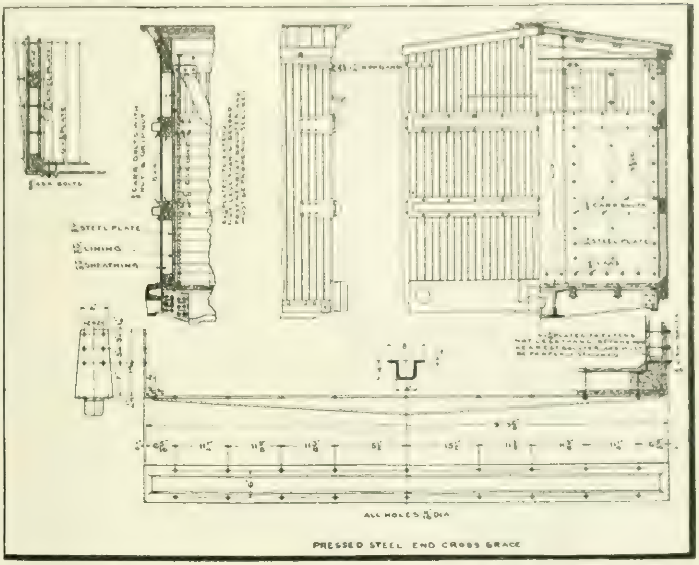


Fig. 1.—Reinforcement for Wooden Cars with Standard M.C.B. Lining.

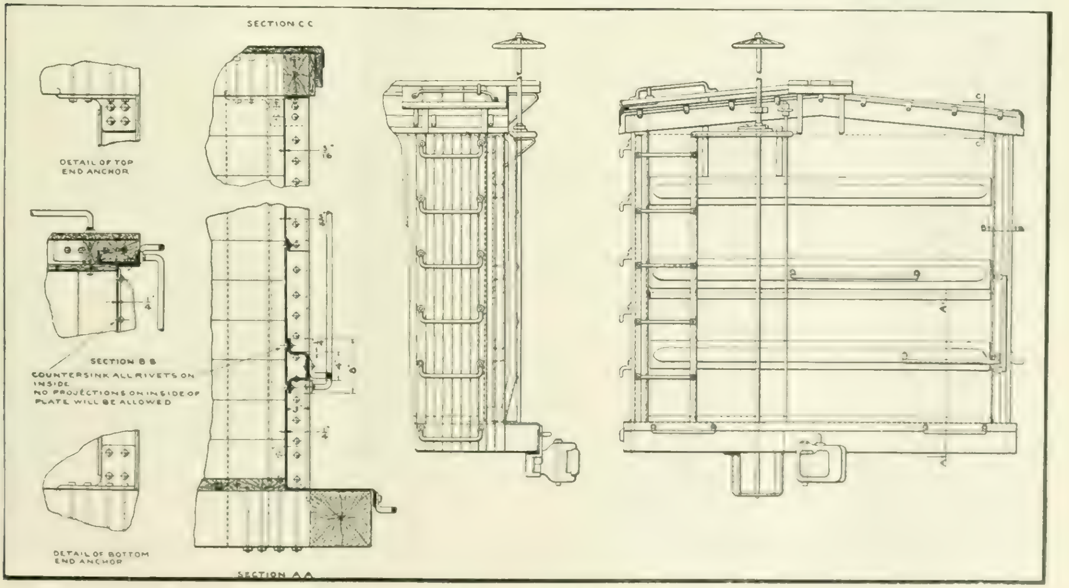

SECTION C C
DETAIL OF TOP END ANCHOR
SECTION B B
COUNTERSINK ALL RIVETS ON INSIDE
NO PROJECTIONS ON INSIDE OF PLATE WILL BE ALLOWED
DETAIL OF BOTTOM END ANCHOR
SECTION A A

Fig. 2.—Reinforcement of Wooden Cars to Replace Broken Ends.

of draft sill members, or part of member between braces, to be not more than 20 d, where d is the depth of the member measured in the direction in which buckling might take place.

For new cars to be built after 1913 a greater strength should be required. Transportation requirements have increased greatly in the past ten years. Heavy freight locomotives, including Mallet road locomotives, greater efforts to pass cars through yards quickly, and rougher handling of cars, have increased the strains to and the end shock at least 50 per cent. Manufacturers of couplers, draft gears, draft attachments, etc., are all busy increasing the strength of their specialties, and are generally aiming to obtain double the original strength.

Recommendations for new cars.—Area of centre sills, not less than 24 sq. ins. Ratio of stress to end strain, not more than 0.06. The length of centre draft sill members, or part of member between braces, to be not more than 20 d, where d is the depth of the member, measured in the direction in which buckling might take place.

Box Car End Design and Strength.

F. F. Gaines suggested to the M.C.B. Association that designs of end framing of box cars, to prevent damage to car by shifting load, be submitted.

An investigation of box car repairs leads to a realization of the ever increasing damage to box car ends and consequent expense of repairs. Wooden ends without metal reinforcement no longer meet transportation requirements; therefore, metal ends and metal reinforcements have been applied, tested, and found much superior to wooden ends. Metal ends can be used either with or without wood lining. When using metal ends without wood lining, the inside surface of the plate must have no projections, such as bolt or rivet heads. B. W. Dunn, on Mar. 21, 1913, advised as follows:—"Par. 1662 (f), I.C.C. Regulations, prescribes that in a freight car to carry dangerous explosives, special car must be taken 'to have no projecting nails or bolts or exposed pieces of metal which may work loose or produce holes in packages of explosives during transit.' It is hoped, therefore, that you will be able to arrange the design so that the rivet heads will not project. If there is to be no interior wooden lining, and projection of the rivets cannot be avoided, it would seem that the federal regulations would require a special wooden lining to be placed in the end of a car of this kind at least as high as the lading of explosive packages. I do not interpret the federal regulations to forbid

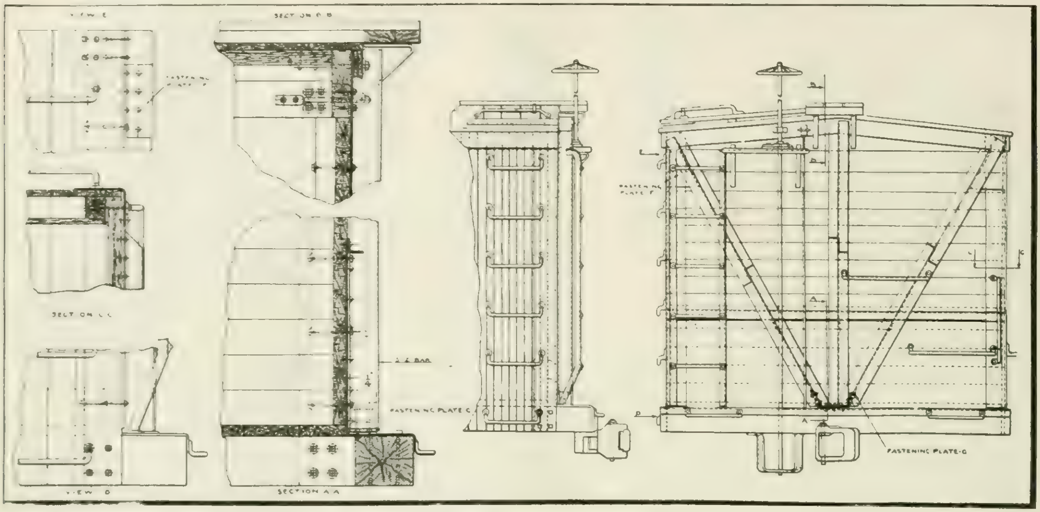


Fig. 3.—Reinforcement for New Cars.

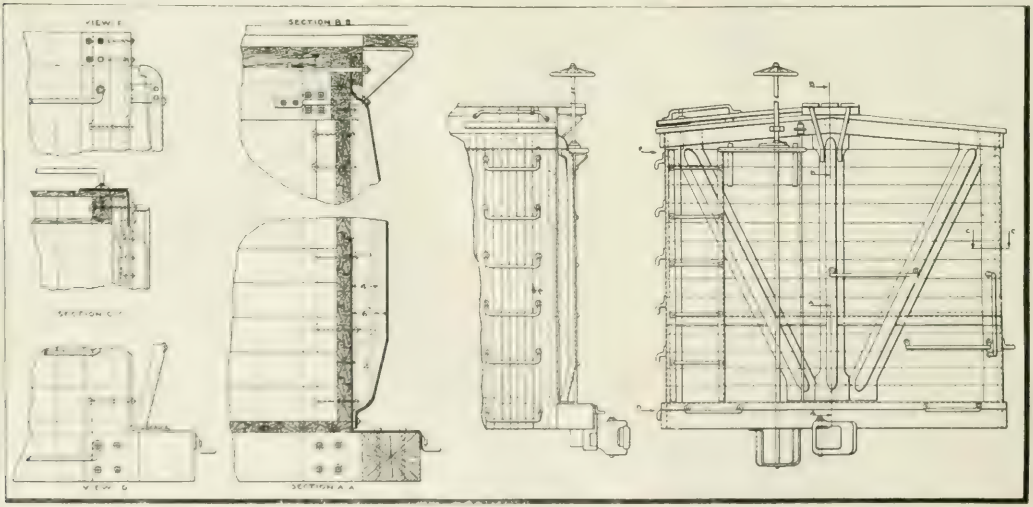


Fig. 4.—Reinforcement for New Cars.

the presence of flat metal surfaces, such as this reinforcing plate would be, if the rivet heads did not project."

RECOMMENDATIONS. — Wooden cars with standard M.C.B. lining should have the ends reinforced with metal construction in accord with fig. 1, or its equivalent.

Steel underframe cars with end lining 1½ ins. thick and over should be equipped with outside braces, shown on fig. 1, but the inside plate may be omitted. In applying outside braces, due regard must be given to compliance with U.S. Safety Appliance Rules for coupler and end ladder clearances.

Cars with wood superstructure, requiring complete renewal of ends, should have steel ends applied, in accord with fig. 2, or its equivalent.

New cars should be equipped with ends of the type shown on figs. 3 and 4. The section modulus of the posts and braces, 2 ft. above floor line, not including corner posts or flat end plate, should not be less than 15. The Murphy or Van Dorn steel ends can be used instead of those shown on figs. 1, 2, 3 and 4.

Each end must be attached to the longitudinal car members, either directly or through other members, by fastenings sufficient in strength to develop the full strength of the end.

The constructions shown in the diagrams are equally applicable to outside or inside end sill cars by modifying the attachment at bottom to suit depth of end sill.

Seal Records of Box Car End Doors.

G. A. Hancock, General Superintendent Motive Power, St. Louis and San Francisco Rd., wrote a member of the committee as follows:—

"I have received a communication from the local freight agents of the Eastern Division on a subject which I think merits the attention of the committee of standards. Their communication reads as follows:—'Much difficulty is experienced in having yard clerks obtain accurate seal records of end doors, on account of inconvenient location and risk of personal injury. Claims are now being paid on account of no end door seal record, and cars are being pilfered by theft through end doors, which can be entered with the least chance for detection. Is an end door in a standard box car essential? If so, could it not be placed near the side of car where seals could be read from the side ladder?'

"It brought out the discussion that an end door is desirable for loading certain classes of lumber, and that in a shipment of lumber there sometimes are specially designed pieces that are too long to go into the side door, and that have to go in at the end door, so the agents have referred the matter to this office with request that we advise: If it is essential to have end doors in box cars; if end doors are necessary, if they cannot be located where the seals can be read with less danger of personal injury than at present; if some standard location cannot be adopted so that all will be alike; if the vertical height of the end door could not be made standard and door so designed that it could not be entered by a person intent on robbing the car, even though door was not sealed.

"As we are not putting end doors in our modern box cars, but as they are being placed in cars built by other companies, I believe that this is a matter that should be handled by the committee on standards and recommended practices, in connection with reports they made in 1912 on the height of seals on side doors."

Both kinds of cars, those with and those without end doors, used for the purpose of loading lumber, have been common in years past, but each year fewer new cars with end doors are built, because the end doors are valuable only on roads handling long lumber directly from the lumber regions as an important feature of traffic. Roads which formerly equipped all box cars with end doors have eliminated them from new cars, and are permanently fastening them in place on some of their old cars, leaving the end doors operative only on short box cars. This indicates that with the advent of the 40 ft. box car the end doors will gradually become obsolete.

RECOMMENDATIONS.—End doors used for loading lumber in box cars are essential only on roads having a large lumber hauling in box cars as an essential feature of traffic. End doors must be so constructed that when closed, they be automatically by means of a lock, accessible only from the inside of the car, thus avoiding the necessity of taking seal records. Seal appliances now in use, and not accessible from ground or from end ladders, should be revised so as to be accessible from ground or end ladders, to promote the safety of employes.

Report of Standing Committee on Mechanical Stokers.

The Master Mechanics' Committee, A. Kearney, Assistant Superintendent of Motive Power, Norfolk and Western Ry., Roanoke, Va., chairman, and of which G. S. Hodgins, of the National Transcontinental Ry. Commission's Staff at Ottawa, Ont., is a member, reported as follows:—

The development of the locomotive stoker has been watched by many of us with more than ordinary interest and patience, it being another instance where skill and genius, by the application of mechanics, bids fair to materially reduce physical labor. The utilization of machinery to perform what hitherto was accomplished by manual labor has been achieved in much larger as well as smaller problems, but few have been more welcomed than the automatic or semi automatic apparatus by which the larger locomotive is successfully supplied with fuel at a rate and in such a manner as to produce efficiency in the operation of the locomotive, with a reduction in physical work on the part of the fireman.

Curiously enough, few stoker devices differing materially in principle have been launched since the earlier work of developing the locomotive stoker was begun. This subject has been presented to this convention each successive year since 1905, when we listened with much interest to the original paper presented by Mr. Garstang, Superintendent Motive Power, C.C.C. & St. L. Ry. Each year's report has dwelt at length upon the progress made in the continued development of the stoker, and to-day we have results bespeaking marvelous achievements; at the same time the advancement made during the past year, or a little more, has been much greater than heretofore accomplished. While the machine, like many other devices, including the locomotive itself, is susceptible of further improvement, it is receiving benefit as the result of service and study, and probably much will be done before perfection is attained. It is also fair to say that the stoker has undoubtedly reached a commercial stage of development.

Persistent energy in the perfection of the stoker is being rewarded, but it must be conceded that few, if any, devices applicable to the locomotive, having for their purpose the accomplishment of equal efficiency, have carried the difficulties surrounding the successful performance of the stoker, not so much on account of the operation to be performed, but the absence of choice as to arrangement, the absolute limitations in space, and conditions under which the machine must operate.

Within the past few years marked advancement has been made and there is no longer any question that the stoker is of practical value and a perfectly feasible proposition. Pioneers in the work evidently received but passing encouragement in their efforts, doubtless on account of there being probably less real necessity for anything of the kind in average locomotive service than now exists, and for the further reason that any increase in power by such means was not given particular consideration. More recent history very strongly points to the inevitable conclusion that the success of the stoker is not exclusively of mechanical interest, but an operating question as well, and much has been due to the continued solicitude from the viewpoint of capacity, relative consumption, efficiency and operation.

In all work and experimentation with the various schemes suggested, two distinct methods or principles for stoking a locomotive still characterize the stage of development. In one the coal is delivered to the fire box over the bed of the fire, not unlike hand firing, which is generally termed the "scatter" system; while the other delivers the coal up through the bed of the fire from underneath and is designated as the "underfeed" stoker. Both methods have their advocates and strong points of defence. Consequently, having before us the results both types have accomplished, it would be unsafe to conjecture which school will ultimately survive. Probably both will continue to advance, but time only can foretell their fate, and which will in the end prove more economical.

Your committee is therefore unprepared to even venture an opinion as to which type of stoker is better, as both have their points of advantage. There seems to have been a larger number of designs of stokers attempted which have had the "scatter" system for their basic principle than those endeavoring to develop the "underfeed" machine, and probably because the inventors have hoped to reproduce hand firing conditions. Many more types have been worked out than now seem to occupy the field, but those that have lived are constructed upon either the one or the other principle, although they may have differed materially in detail from those that now remain on the market, or have possibly reached the commercial stage of development.

Time seems to have resulted in eliminating many stoker designs, reducing the number mainly to the most prominent, namely, the Crawford, typifying the underfeed; and the Street, representing the "scatter" type. There are, however, two other stokers undergoing development, namely, the Gee and the Hanna, both of the scatter design; and possibly there are many other prospective designs or types which have not yet been presented to the railroads. The stokers which have undergone some development, and may for that matter still be considered (as it is possible their designers are giving them further study with a view of further improvement, etc.), are the Strouse, Barnum, Hayden, Brewster, Harvey, Dickinson, Erie, Hanna, Gee, Crawford and Street. The stoker situation, as well as your committee has been able to ascertain, is as follows:—

STROUSE STOKER.—Seventy-six Strouse stokers have been built to date and ap

TABLE 1.—RAILWAYS REPORTING HAVING STOKERS IN OPERATION, TYPES OF STOKERS AND ENGINES TO WHICH THEY WERE APPLIED

Railway		Stokers		Principal Dimensions of Engines to Which Applied								Expect to Apply
		Number	Type	Type	Weight		Steam Cylinders Inches	Diam. Drivers Inches	Heating Surface	Grate Area	Tractive Power	
					Total	On Drivers						
Queen & Crescent		1	Hanna	Mallet	.	. .	.		.			Re-designed Hanna.
Carolina, Clinchfield & Ohio		1	Hanna	Mallet	342,650	299,250	23 35 x 32	57	5,607	78	70,640	One improved Hanna.
New York Central		1	Street	Mallet	. . . .	. . . .	. . . . . .	. .	. .	.	. . . . .	
Buffalo, Rochester & Pittsburg		1	Street	2-8-2	275,000	217,000	26½x30	63	3,625	56.4	51,160	Dependent on the market for nut and slack coal.
Vandalia		4	Crawford	2-8-0	240,945	216,450	21x28	62	3,839	54.9	45,327	None.
Norfolk & Western	41	40	Street	2-6-6-2	405,000	337,300	22 35 x 32	56	5,006	72.2	73,000	50 Street and 1 Crawford.
		1	Street	4-8-0	262,000	222,000	24 x 30	56	4,460	45.0	52,457	
Chesapeake & Ohio	54		Street	4-8-2	331,000	241,100	29 x 28	62	4,129	66.7	58,100	No decision.
			Street	2-8-2	315,000	243,000	29 x 28	56	4,052	66.7	60,800	
			Street	2-6-6-2	400,000	337,500	22 35 x 32	56	5,041	72.2	82,000	
Baltimore & Ohio		50	Street	2-8-2	282,200	223,600	26 x 32	64	3,968	70	54,587	To 127 engines.
		13	Street	0-8-8-0	461,000	Frt232,700 Rr 2 8,300	26 41 x 32	56	5,578	100	105,000	
		1	Street	2-8-0	220,370	198,650	22 x 30	60	2,876	57.05	42,168	
Pennsylvania West of Pittsburgh	155	98	Crawford	2-8-0	250,500	226,000	24 x 28	62	4,201	55.13	45,400	To probably large power built in future 140 on order.
Pennsylvania West of Pittsburgh		35	Crawford	4-6-2	293,250	189,525	24 x 26	80	5,098	55.4	32,600	
Pennsylvania West of Pittsburgh		18	Crawford	2-8-0	202,000	179,000	22 x 28	56	2,843	49.04	42,000	
Pennsylvania West of Pittsburgh		2	Crawford	0-6-0	135,000	135,000	19 x 26	51	1,755	31.54	28,200	
Pennsylvania Grand Division		2	Crawford	Not given								
St. Louis & San Francisco		1	Street	2-8-8-2	418,000	360,000	24½x30 39	57	5,230	75	83,500	None.

plied to engines on 16 different roads, but on April 1, 1913, none were still in service, so far as known. This design of stoker interferes with the operation of the fire door when it becomes necessary to resort to hand firing. It is one where all of the coal must be shoveled from the tank into a hopper.

BARNUM STOKER. Seven Barnum or C.B. & Q. stokers have been built to date by the Burlington; 1 being applied to a switch engine, 1 to a Prairie type road engine, 5 to Santa Fe decapod engines. All of the latter stokers, we are advised, have been taken out of service on account of difficulties experienced in connection with the driving mechanism used with the taper screws in the stoker trough, also on account of the unsatisfactory distribution of fuel where the lower grades of coal were handled.

HAYDEN, HAYDEN MODIFIED, BREWster, Harvey, Dickinson and Erie Stokers.—Nothing has been done during the past year with the above stokers. That is to say, none of them have passed from the experimental to the commercial stage. The experimental machines which were applied did not wholly meet the requirements of a stoker as viewed by your committee, in that several materially obstructed the fire door, which would interfere with hand firing should such a course become necessary, and the others have not been sufficiently developed.

HANNA STOKER. Eighteen or twenty stokers were applied to Mallet, consolidation and Pacific type locomotives on the Queen & Crescent Rd., but it is our information they have all been taken out of service, in addition to the single stokers which were put on several different roads. The exception to the above is the one machine on the Carolina, Clinchfield & Ohio Rd., which is still in service. The one on the latter road, we understand, continues to do good work, and the manufacturers promise to bring out another within a very short time possessing still further improvements.

THE GEE STOKER is being developed on the Pennsylvania Rd. Only one of this design has been built to date. It is in service on one of their H-6 consolidation locomotives, and is reported as giving very good results.

CRAWFORD STOKER. There have been 153 locomotives on the Pennsylvania Lines West equipped with the Crawford double underfeed stoker. There are 140 locomotives on order which will be equipped with this stoker. The report is that it is probable that larger power built in future will be equipped with this type of stoker. The Vandalia Rd. reports 4 Crawford stokers in operation, and the Pennsylvania Rd. also has 2 in service, making a total of 159 Crawford stokers in service and 140 on order, grand total of 299.

STREET STOKER.—In May, 1909, a locomotive on the L.S. & M.S. Ry. was equipped with the first experimental stoker of the Street design. In 1910 five more stokers were put in service, 3 of which were placed on the L.S. & M.S., where the first experimental stoker was operated. In the year 1911 seven locomotives on four different railways were equipped. All of the last seven, with but one exception, were provided with coal crushers carried on the tank, and handled run of mine coal. All of the machines, we are told, are still in regular service.

In the year 1912 165 machines of the screw-conveyor type were placed in service, 70 on one railway, 50 on another, 40 on another, and 5 on another. Since Jan., 1913, seven additional machines were put in service, besides orders were placed for

50 more by one of the above roads, and an additional order was placed for 120 by another road. Thus we find that there have been 189 Street stokers applied to locomotives in service and 173 on order, making a grand total of 362.

It is particularly interesting to note that the Crawford and Street stokers, while representing two distinct types, are developing at about an equal rate judging from the number of machines which have been applied. The Street stoker has been placed on a larger number of roads, while the Crawford stoker, with the exception of 2, has been confined to the Pennsylvania System. The 2 stokers referred to have been applied, 1 each, to two different railways.

Of the 38 roads replying to the circular of inquiry issued by your committee, 7 report stokers in operation, ranging in number from 1 to 153, there being a total of 326 stokers reported in operation, of which number we find 159 are of the "underfeed" Crawford stoker; and the remainder, 167 of the "overfeed" or "scatter" type; 2 Hanna, and the rest Street stokers.

In Table 1 is shown a list of railways which report using stokers, furnishing at the same time the number and type of each machine and the principal dimensions of the engines to which applied. An expression was invited concerning any further application of stokers, which was replied to as shown. Checking the number of stokers reported as being in service, we find they include about 189 of the Street pattern. This figure was secured from the Locomotive Stoker Co., and as but 165 are shown by the reports from the different roads, we conclude there are some roads using the stoker who have not replied to the circular.

Your committee has been able to secure but very little information concerning the actual and detailed operation of stokers from roads where they have been installed in any considerable number; however, the reports we have been able to secure have been put together, as shown in tabulated form. While the information is quite limited, it will no doubt be of some interest.

Table 2. Performance of Crawford double underfeed stoker on Pennsylvania Lines West of Pittsburgh, including all trips of all stokers from the experimental installation to Feb. 28, 1913.

Coal fired by stoker in per cent of total Coal fired	No. of trips	Per cent. trips Total Number of trips
100	19,475	61.0
99	280	0.9
98	416	1.3
95–98	1,530	4.8
90–95	1,847	5.8
85–90	680	2.1
80–85	903	2.8
75–80	1,209	3.8
70–75	379	1.2
Below 70	5,191	16.3
Total	31,910	100.0

Table 2 gives a rather comprehensive idea of the success with which the Crawford underfeed stokers have been operated on the Penna. Rd. The tabulation covers the performance of the stokers with respect to handling fuel. Up to Feb. 28, 1913, the stoker-fired engines had made 31,910 trips. Of this total number of trips, 19,475, or 61% were 100% trips; that is to say, trips on which the stoker handled practically all of the coal which was placed in the fire box. In comparison with this, we find that only 16.3% of the total number of trips were below 70%., stoker fired. The table also shows the number of trips which were partially successfully stoker fired, which

TABLE 3—PERFORMANCE OF MALLET LOCOMOTIVES RELATING TO THE OPERATION OF STREET STOKERS ON NORFOLK & WESTERN RY. AND C. & O. RY.

ON NORFOLK & WESTERN RY.

Month	ENGINE DAYS			ENGINE FAILURES ATTRIBUTED TO STOKER							Monthly Engine Mileage	Average Mileage per Stoker failure	Average mileage per failure other than stoker	STOKER REPAIRS INCLUDED IN REPAIRS TO STOKER ENGINES. BRICK ARCH REPAIRS INCLUDED					[illegible]			
	Total in Month	Out of Service or in hands of M P Department	In service or in hands of C T Department	Improper handling	Lack of Lubrication	Hidden Defect	Machinery or Fresh Break	Shop Fail	Clogged with Wood Bolts Etc	Total				Labor in dollars	Material in dollars	Total in Dollars	Accumulated Total Dollars	Cost of stoker and brick arch per 1,000 Miles dollars	Labor in Dollars	Material in Dollars	Total in Dollars	Accumulated Total Dollars
1912																						
April	52	12	40								4,835	No failures	4,835	$ 9.57	$ 0.15	$ 9 72		$2 01				
May	408	142	266	4			2	1	1	8	27,029	3,378.6	1,287	188.85	8.53	197.38	$ 207 10	7 30				
June	450	134	316								32,046	No failures	2,670.5	178.88	21.80	200 68	407 18	6 26	$ 3 60	$19 82	$23 42	
July	465	117	343	1			1		2	4	34,624	8,656	5,770.6	149 17	30.41	179 58	587 36	5 18	25	28	53	$23 95
August	465	116½	348½								37,309	No failures	4,145.4	185.99	111.53	297 52	884 88	7 97	4 53	11 33	15 86	39 81
Sept.	457	118½	338½		1					1	37,988	37,988	4,748.5	176.47	30.32	206 79	1,091 67	5 44	2 60	9 54	12 14	51 95
Oct.	895	278½	616½	2	1			2		5	63888.12	12,777.7	5,914.4	234.59	35.49	270 08	1,361 75	4 22	1 41	4 12	5 53	57 48
Nov.	1199	372	827	4	1		1		1	7	84,983	12,140.4	5,665.5	403.62	72.21	475 83	1,837 58	5 60	3 44	10	3 54	61 02
Dec.	1240	429	811	2	1		1	2	2	8	89,698	11,212.2	2,718.1	415.06	73.63	488 69	2,326 27	5 45	3 22	6 43	9 65	70 67
1913																						
Jan.	1240	433	807	1	3	1	4		3	12	113,163	9,430.2	3,650 4	365 49	115 15	480 64	2,806 91	4 25	6 86	10 39	17 25	87 92
Total	6871	2152½	4718½	14	7	1	9	5	9	45	525,563			2,307 69	499 22	2,806 91			25 91	62 01	87 92	
Avg.	68711	215 25	471 85	1 4	7	1	9	5	9	4.5	52,556.3	11,679.2	3,527	230 77	49 92	280 69		5 34	2 59	6 20	8 79	

ON ENGINES OF THE CHESAPEAKE & OHIO RY.

Month	Total in Month	Out of Service or in hands of M P Department	In service or in hands of C T Department	Improper handling	Lack of Lubrication	Hidden Defect	Machinery or Fresh Break	Shop Fail	Clogged with Wood Bolts Etc	Total	Monthly Engine Mileage	Average Mileage per Stoker failure	Average mileage per failure other than stoker	Labor in dollars	Material in dollars	Total in Dollars	Accumulated Total Dollars	Cost of stoker and brick arch per 1,000 Miles dollars
1912																		
Nov.										18	87,416	4,856				$ 655.36		$7.50
Dec.										33	121,269	3,675				745.88	$1401 24	6 20
1913																		
Jan.										27	140,275	5,195				748.86	2,150 10	5.30
Total										78	348,960					2,150 10		
Avg.										26		4,474				716 70		6 16

[illegible] performance. This information, while serving to show the operation of the stoker satisfactorily, does not give the cost of maintenance and the character of its failures.

Table 3 has been prepared to show the performance of the Street stoker on Mallet engines on the Norfolk & Western and Chesapeake & Ohio Railways. The Norfolk & Western Ry., upon the receipt of 40 Mallet locomotives, all equipped with the Street stoker, instituted a systematic record for [illegible] performance, their failures and responsibility, and cost of repairs separated for labor and material, both for the stoker as well as the brick arch with which the engines were also equipped. This table also shows the total number of engine days, or days the engines have been in and out of service.

Taking the average performance of the Mallet engines on the Norfolk & Western Ry. up to Feb. 1, 1913, it will be observed that the average number of failures per month was [illegible], and the average mileage per stoker failure was 11.679 miles. The average for failures other than those attributed to the stoker was 3.527 miles. The record shows 23.2% of the total failures were attributed to the stokers.

Another item of interest to which attention might be directed is the cost of stoker and brick arch repairs per 1,000 miles, which, as will be noted, averages $5.34. The Chesapeake & Ohio Ry. furnish data showing the performance of 54 stoker fired engines, covering three months, namely, Nov. and Dec., 1912, and Jan., 1913. The average mileage per stoker failure is found to be 4.474 miles, which is lower than the reports received from the Norfolk & Western Ry. It will also be noted that the average cost for repairs per 1,000 miles is higher than indicated in the report from the Norfolk & Western, which might be a natural consequence, since the stoker failures were greater in number per miles service.

Your committee sought to establish some data to show the relative fuel consumption in hand firing as compared with the operation of the stoker, but there seems to have been very little reliable information so far obtained. The St. Louis & San Francisco Rd. has furnished a comparison of the coal consumption of the Mallet locomotive hand fired versus stoker fired, the runs being made over a district of 119 miles. The report shows that there were a number of [illegible] might to some extent affect the figures.

The information as presented indicates higher economy with hand fired locomotives. They show an average evaporation of 9.13 lbs. of water per pound of coal for four trips, while the stoker fired engine gave an equivalent average evaporation of 7.88 lbs. of water per pound of coal for the trips. No information is given bearing upon the quality, character or heat value of the fuel [illegible]

[illegible] there is still some uncertainty as to any saving [illegible] the stoker has the advantage; then there [illegible] off in coal consumption.

[illegible]

burns a better fire, with the scatter type running from 4 to 6 ins. in depth, as against 18 or 20 ins. hand fired. Furthermore, with the stoker the fire door is kept closed and the combustion must necessarily be more complete.

A saving in fuel, it would seem, can be expected, not only in quantity but in the grade it is possible to use with the stoker. Generally speaking, the best results seem to be obtained with the smaller sizes of fuel; in fact, with the scatter type machine, slack or crushed coal is necessary, and probably it can be used equally well with the underfeed machines, but the report is that the Crawford stoker has to date been giving good results with small lump coal. With improved combustion, coals lower in heat value (consequently cheaper in price) can be utilized, adding still further to economy conceded the stoker. It has also been observed that when starting out steam can be got up quickly, and probably with advantage as compared with hand firing.

It seems to be admitted by even expert firemen who have had some years experience hand firing, that they have derived valuable information in hand firing after handling the stoker and closely watching its operation. With a more perfect combustion there is naturally some reduction in the emission of smoke, or unconsumed carbon, and it is also reported that where the stoker is properly handled it becomes necessary to use the fire hook but very little, if any, on the road, all of which should mean something in the direction of economy.

With reference to the character of coal used on stoker fired locomotives, we find quite a variety of grades have been reported. In order to compare the different grades table 4 has been prepared, but comments seem quite unnecessary, as a glance at the information is sufficient to show that the successful operation of the locomotive stoker as reported does not seem to be confined to any particular grade or character of fuel.

It is unfortunate that it has been impossible so far to secure definite data for the relative consumption of fuel with the stoker as compared with hand firing. There are, however, some very elaborate tests under way, but they have not progressed sufficiently to justify reliable conclusions.

Table 4.

RAILWAY	Kind of coal used	Per cent of ash	Difference in coal used on stoker fired and hand fired locomotives
[illegible]	Bituminous, coking.	7 to 8	Same used in each case
Vandalia	Indiana semi-coking. Illinois coal of [illegible]	8 to 12 ..	Same coal when Indiana coal is used. No Illinois coal used on stoker fired engine.
[illegible]	[illegible] and slack coal some coking and some non coking	12 to 15 .	Same coal used in crusher type stokers. Picked, special coal used in conveyor type.
[illegible]	[illegible]	10	Non-coking coal used in stokers and coking coal used in hand fired engines.
[illegible]	Non coking bituminous from Indiana, Illinois, Pennsylvania and Ohio...	6 to 16	Same coal used in each case.
[illegible]	[illegible]	9 to 11	Nut and a mixture of nut and slack sometimes very fine slack, for stokers. Run of mine used for hand fired engines.
[illegible]	[illegible]		Same coal used in each case.
[illegible]	[illegible]	7 to 10	The run of mine coal is screened, fine slack used on stokers, lump on hand fired engines.

[illegible]

The Carolina, Clinchfield & Ohio Ry. reports heavier trains hauled, but does not say to what extent.

The Vandalia Rd. reports their stoker fired engines consume about the same time on the division, but that a more uniform steam pressure is maintained.

The B. & O. Rd. reports that it is possible to haul heavier trains with the stoker engines.

The Pennsylvania Lines West of Pittsburgh reports 15% more tonnage hauled with stoker fired engines on slow freight and on long, heavy grades.

The Buffalo, Rochester & Pittsburgh has not observed any difference between hand firing and stoker operation.

The St. Louis & San Francisco Rd. reports better performance with stoker fired engines, stating that some firemen are not able to keep up steam on heavy trains on the long runs.

The Norfolk & Western Ry. has not recognized any difference in tonnage rating between hand fired and stoker fired engines, since with but one exception all of their stokers are applied to one type of locomotive. It has been observed, however, that with the stoker operated properly the locomotive can be worked to its maximum capacity without any marked effect upon the steam pressure, which is a distinct advantage.

The Virginian Ry. reports some improvement in steaming capacity and tonnage hauled, but does not give amounts.

A review of the reports clearly indicate that while all concede the stoker is capable of handling heavier tonnage, no road is ready to name the amount. Probably if such information had been secured, it might have proven to be widely different on the several roads on account of the existence of widely different operating conditions. The stoker, it is generally believed, is capable of firing a larger amount of fuel and still retain uniformity in its work, from which it follows that higher boiler power is reasonably sure, unless there is a failure from some other cause, but this increased capacity would not be shown in the starting of the locomotive. On the contrary, higher steam pressure maintained would result in higher tonnage, speed if desired, or more work performed by the locomotive.

On some roads where peculiar physical characteristics prevail with respect to ruling grades, etc., it might mean that an engine could be safely given a larger tonnage than had previously been handled, where the ability to start the train from the usual stopping points had not been a controlling factor in determining the tonnage rating.

Therefore, the question resolves itself to one where each road is better able to work out for itself the question of using the stoker with any return after taking into consideration the physical characteristics of the road, size of engines, tonnage now being hauled, and what advantages might accrue. The question is rather one where it must be decided, first, if a more uniform rate of steaming is needed, and what expenditure might be warranted to secure such a condition.

Since with the scatter type of machine the arch brick is regarded as essential, and possibly of equal advantage in other types in the ratio of an engine with or without an arch hand fired, it would seem its use may be a prime consideration, since it would seem to have a specific value.

A superheater can be introduced, carrying with it some 10 to 15% improvement in fuel or steaming capacity; and if still further advantage is desirable and the quality and quantity of fuel to be fired becomes a factor, the use of the stoker will be felt in the production of a uniform steam pressure, with possibly some saving in fuel where the conditions are equal, or higher steaming capacity with higher speed.

Where it is possible to keep the fire door closed, it must follow that the temperature in the fire box is more uniformly maintained, which in turn must result in better service conditions for the fire box, flue sheet and seams, otherwise our theories fall flat. As a matter of fact, observations, though limited, seem to indicate that the life of the flue is being increased, and equal results must necessarily be in store for the flue sheet and the fire box generally, but some allowance should be made for what is accomplished by the arch brick.

Very successful results can be obtained in the operation of the stoker, but some intelligence is necessary to make sure that it is allowed to work efficiently, and one of the most important features to be observed is to prevent the engine from continually popping off, wasting steam and fuel; but even this can be controlled, simply by the manipulation of apparatus requiring no other energy than ordinary attention. No particular effort, as a rule, is required to keep the stoker properly adjusted, working regularly, and free from clogging or disturbance to the uniform supply of fuel to the fire box. In the event of a failure of the stoker mechanism, the fireman, as a rule, can do but very little, except to resort to hand firing, bringing the engine into terminal, where repairs can be made.

In handling stoker locomotives at terminals, or at ash pits along the road, there is some time to be saved, as the thinner fire can be knocked out or cleaned within 10 or 15 minutes time, as against probably twice the delay in handling a locomotive which has been hand fired.

There is no doubt that the maintenance of the stoker, by reason of its increased amount of machinery and working parts, is going to represent an item of repairs; and even if it has been rather low, as has been shown, some alteration in the figures is likely to take place as the stokers become older. It is also true that as the machines are improved and more substantial parts are applied, and greater proficiency in their manipulation is attained, there should be a corresponding improvement in the cost of maintenance. However, such items, including the time required to turn, repair, and otherwise put engines in shape for further service, should receive due consideration in summing up the net advantages derived by the stoker in service.

Reflecting for a moment upon the apparent work and interest manifested in the locomotive stoker, it is believed we must necessarily conclude that although the stoker has not been developed to a state of perfection, it has not only proven to be practical, but has demonstrated by service and endurance tests that it is of value, and that there is a growing field for its use.

In concluding, your committee wishes to show as a feature of this report what they conclude are [illegible] which should, [illegible] in the satisfactory locomotive stoker:—1. It should convey coal [illegible] to the fire box with the minimum of physical work on the part of the fireman. 2. It should maintain a maximum steam pressure on the locomotive, and have a margin for additional feeding capacity. 3. It should leave the fire box door, and deck as much as practicable, unobstructed. 4. It should maintain an ideal fire for economic fuel consumption. 5. It should distribute fuel in the fire box in such a manner as to reduce to a minimum any necessity for disturbing the fire by means of the hook.

Report of Committee on Overhead Inspection of Box Cars.

The Master Car Builders' Committee, A. Kearney, Assistant Superintendent of Motive Power, Norfolk & Western Ry., reported as follows:—

Your committee on rules for loading materials, to whom was last year assigned the formulation of rules for the overhead inspection of box cars for loading, was forced to present a report of progress at the last convention on account of its inability to satisfactorily cover the field a subject of so much importance seemed to warrant. With the assistance of the American Railway Association, the General Managers' Association of the Southeast, and others, a great deal of data showing in a general way what was taking place, and what claims were resulting from damaged and defective equipment, were secured; however, the statistics submitted at that time and those subsequently obtained seem to be much the same, except perhaps in quantity, rate of increase and losses sustained. In our previous report many of the various causes apparently responsible for damage to shipments were given in detail, covering no small space in the paper, hence such statistical information is regarded as needless at this time and has been omitted.

On account of the many damage claims presented, with the attendant difficulties in adjustment, often by reason of uncertainty in some instances as to the proportion of the claim that might belong to the condition of the car at the initial point of loading, and how much originated on the line of the road, its treatment, etc., it would seem proper to mention at the outset that the solution of the problem evidently narrows itself down to the important factor of inspection, selection and proper preparation of the car at the loading station.

As was alluded to last year, it is the obvious precaution with which such an undertaking must be approached that further time was asked for, and, as anticipated, we find ourselves confronted with innumerable difficulties and objections offered by railways explaining that latitude must be allowed on account of possible unwarranted interference to movement where unnecessary time might be consumed selecting and preparing equipment, especially where the supply and opportunity to obtain equipment is of considerable moment. It is still further argued that such a procedure might result in embarrassment if any specific and more stringent rules are established for the crating and inspection of equipment, even though the work be confined to cars for shipment of only certain commodities readily damaged by water, or leakage losses. At all events, it seems to be the general opinion, at least in certain localities, that steps might be profitably taken working to the standardization of rules and requirements for the selection and inspection of equipment required for certain shipments, and it is the opinion of your committee that if it is going to be possible to secure improved conditions along this line, they are most likely to be obtained by confining our attention to shipments readily damaged by moisture, eliminating for the present the consideration of other commodities, at least until some systematic rule can be established and gotten under way.

It was with the idea that the best progress might be obtained by pursuing the lines of least resistance, your committee reached the conclusion that if it could, with the assistance of the American Railway and Master Car Builders' Associations, secure a complete list of the roads throughout the country using certificate of inspection cards, and obtain from them not only facsimiles of such cards used by them, but instructions going therewith, it might be possible to reduce the several forms to a composite card acceptable to all now using cards, and we would then have a card they would possibly be satisfied in the interest of uniformity to adopt, in lieu of any standard they might now be using. It has been the idea of your committee that this would seem to be the most profitable direction for their energies, and that a composite card acceptable to the roads now following the practice of securing certificate of inspection cards will be the first solid ground we might hope to reach towards working to a uniform practice. Furthermore, if the interest of such roads can be secured in this direction, the proposition will be readily given the necessary impetus to carry it as far as it can be employed with profit, and without danger of being used beyond the point of economy. Working to this end, therefore, and setting aside for the present any consideration of the shipment of products other than those readily damaged by moisture, your committee has secured, and show herewith, what is supposed to be a complete list of roads using certificate of inspection cards for the purpose above mentioned. They appear to be confined to the roads running out of Chicago, Minneapolis and St. Louis. The roads using such cards are as follows: Great Northern Ry., Chicago, Burlington & Qunicy Rd., Chicago Great Western Rd., Chicago, Milwaukee & St. Paul Ry., Minneapolis, St. Paul & Sault Ste. Marie Ry., Illinois Central Rd., Atchison, Topeka & Santa Fe Ry., St. Louis & San Francisco Rd.

As a matter of information, and to show how deductions made by your committee have been reached, they present herewith facsimiles of cards used by the above roads, with instructions covering their use.

The Great Northern, Chicago Great Western, and Chicago, Milwaukee & St. Paul use only one form of card, and the card used by each road is practically the same. This being the case, we are showing below only a facsimile of the card used by the C. M. & St. P.:—

C. M. & St. P. Ry.
This car
No................ Initial.................
FOR FLOUR.
Inspected by ....
Date ....

There have been no special instructions issued by these roads as to the inspection to be made, a specially trained man being selected for the work.

The C. B. & Q. uses four different forms of inspection cards. A facsimile of the cards used is shown herewith:—

(1.) C. B. & Q. R. R.
This car
No.................. Initial..................
Is O. K. for
FLOUR, CEMENT, GRAIN, ROUGH FREIGHT.
Inspected by .... At ....
Date ....

(2.) C. B. & Q. R. R.
This car
No.................. Initial..................
O. K. FOR FLOUR.
Inspected by ....
Date ....

(3.) C. B. & Q. R. R.
FIT FOR GRAIN.
No.................. Initial..................
Inspected by ....
Date ....191..

(4.) C. B. & Q. R. R.
NOT FIT FOR GRAIN.
No................. Initial.................
Inspected by ....
Date ....191..

There are no specific instructions for inspection issued. The master mechanics are instructed to have the empty cars inspected and carded according to their condition and the requirements of traffic.

The M. St. P. & S. S. M. is using two inspection cards, one for cars suitable for flour loading, and one for cars not suitable for flour, grain or merchandise. A facsimile of the cards used is shown herewith:

M. St. P. & S. S. M. Ry. Co.
This car
O. K. FOR FLOUR.
Date ....191.. ...

M. St. P. & S. S. M. Ry. Co.
This car must not be loaded with flour, grain or merchandise.

The instructions relative to the use of these cards are that the cars are to be given a special interior and exterior inspection, to see that sheathing, lining, flooring, roofing, doors and fastenings are in good condition; any small holes found in the floor are to be cleated over, care being taken to bevel the edges of the cleats to prvent damage to flour sacks. Cars with a bad odor, due to carrying hides, oil, etc., are not to be used for flour. Cars otherwise O.K.'d, with the exception of having small oil spots on the floor, are to be painted over with quick-drying paint. All projecting nails, spikes or bolts to be removed or driven in to prevent damage to flour sacks, and all cars are to be swept out thoroughly clean. Cars fit for flour loading are to be carded O.K., and the numbers and initial of such cars are to be turned in to the agent.

The Santa Fe is using two inspection cards, one for flour and one for grain loading. There is no difference in the make-up of the cards, except one is printed in red and the other in green. A facsimile of the cards used is given herewith:

SANTA FE.
FLOUR.
Inspected and placed in condition for flour loading.
Inspector..............................
Date.................. Station..............
Car No.................. Initial..............

SANTA FE.
GRAIN.
Inspected and placed in condition for grain loading.
Inspector..............................
Date................. Station..............
Car No.................. Initial.............. ....

The Santa Fe instructions relative to the use of the inspection cards are as follows:—"Where car inspectors are located, cards will be furnished the inspectors, and at stations where there are no car inspectors, the local agents, or their representatives, will inspect all cars for grain and flour loading. If after proper inspection cars are found to be in suitable condition for grain and flour loading, a card is to be attached to the car door, three feet from the bottom of the door. Switchmen or local crews should be prohibited from placing at loading docks, platforms, or elevators, an empty car which does not have one of these cards attached. When a car has been inspected and card placed thereon and placed at loading dock, and when shipper or his representative has inspected the car and accepted same for loading, the card will be detached and returned to the representative of the company, and shall be attached to and filed by the agent with duplicate bill of lading or shipping instructions. Shippers must be notified when a car is made empty at their plant that the car must not be loaded until it has been inspected and necessary card attached."

The Santa Fe is now contemplating the use of another form of inspection card, which is made up in manifest form so that shippers can have a copy for their use. Following is a facsimile of this card:—

SANTA FE.
THIS CAR O. K. FOR GRAIN LOADING.
Car No............ Initial...........
Date.............191... Inspector.............
At. ....

The Frisco Lines are using three forms of inspection cards. A facsimile of cards used and the instructions to inspectors are given herewith:—

FLOUR SHIPMENTS AND OTHER MILL PRODUCTS.

"Form 255 standard, facsimile of which you will find below, must be properly filled out and applied to each car inspected by agents or car inspectors, which will indicate that car is suitable for loading of flour and other mill products. Agents or their representatives must not sign bills of lading unless form 255 standard is turned in by shipper, attached to the duplicate bill of lading or shipping receipt, and these forms must be retained in the office files for future reference.

FRISCO LINES.
FLOUR FEED AND OTHER MILL PRODUCTS.
Inspected and placed in condition for flour loading.
Inspector..............................
Station ....
Car No............ Initial...........

"The roofs must be carefully inspected to ascertain if waterproof, the doors to see that they fit tight, and are in good condition. The interior must be inspected carefully to see that the floor is free from oil stains, and other substances that would result in damage. The doors should be pulled shut and inspected for leakage. All nails and other projections that might cause damage must be removed, driven in or covered up.

"The doors of all cars loaded on Frisco rails and on foreign line rails for movement via Frisco, must be wedged, papered and stripped in the following manner: Drive one wedge between each door shoe and the door, which will force the door up against side of car. After the wedges have been applied, [illegible] of [illegible] asphalt paper, 11 inches wide, must be applied over the openings of the car door, that is, one strip on each side of the door and one on the top of the door, the paper to be held in place with narrow wooden strips.

CEMENT AND PLASTER SHIPMENTS.

"Form [illegible] standard, facsimile of which you will find below, must be properly filled out and applied to each car inspected by agents or car inspector, which will indicate car is suitable for loading. Agents or their representatives must sign bills of lading unless this form is presented by shipper, attached to the duplicate bill of lading or shipping receipt, and these forms must be retained in office files for future reference.

FRISCO LINES.
CEMENT OR PLASTER.
Inspected and placed in condition for cement or plaster loading.
Inspector..............................
Date .... Station ....
Car No. .... Initial ....

"Great care must be exercised in selecting cars for this loading. Roofs must be in first class condition, so as not to admit water, and all nails or other projections that will damage the product removed. The doors must be wedged by driving two wedges between each door shoe and the door, which will force the door tight against the side of the car.

GRAIN SHIPMENTS.

"Form 256 standard, facsimile of which you will find below, must be properly filled out and applied to each car inspected by agent or inspector, which will indicate that car is suitable for grain loading, and has been properly coopered and burlapped. Agents or their authorized representatives must not sign bills of lading unless form 256 standard is presented by the shipper, attached to the duplicate bill of lading or shipping order, and these forms must be retained in the office files for future reference.

FRISCO LINES.
GRAIN.
Inspected and placed in condition for grain loading.
Inspector..............................
Date .... Station.................
Car No............ Initial...........

"A standard grain door section is 7 ft. long and 20 ins. wide. Usually three or more sections are used for each door. They should be placed in position and nailed to the door posts with 8 penny nails. Large nails or spikes must not be used. Care should be exercised to see that the doors fit closely, and that there are no holes in them. Nails protruding from door posts must be pulled out so that the grain doors will fit closely. Grain doors made of light material must not be used for the bottom or middle section, account pressure being greater on these sections. Doors made of good strong lumber should be used.

"Burlap will be furnished by the store department upon receipt of proper requisition, cut in strips 8 ft. long and 40 ins. wide for the doors, and 3 ft. long and 40 ins. wide to cover the draft bolts. Two strips 8 ft. long should be used to cover the grain doors. This leaves 6 ins. over each end of the grain door for tacking to the side of the car.

"The lower strip should be allowed to lap on the car floor 8 to 10 ins. in order to make a leak proof joint. It must not be tacked to the car floor. The top strip should lap over the lower strip from 4 to 6 ins., and should not be tacked to the grain door. Wooden strips will be furnished with the burlap to tack the ends of the burlap to the side of the car, so that the grain will not leak through between the end of the grain doors and door posts.

"The short pieces of burlap are to be tacked over the draft bolts and held in place by short strips of wood tacked around the edges. Burlap should be applied loosely and not stretched tight across the boards, so that it can give anl not tear from the bulging of the doors.

"In addition to using burlap over the grain doors and draft bolts, it should also be used wherever necessary to prevent the leakage of grain."

As the result of an endeavor to fit together the cards now in use, your committee wishes to direct attention to some of the differences in their style; however, in the main they seem to have been designed for one and the same purpose. While the general practice seems to be to use cards bearing printing in large letters showing a specific commodity, or in some cases one or two products, we do not seem to be able to readily get away from a card on which provisions will be made for the designation of the shipment for which the car is inspected and made suitable without introducing more than one card, which was not wanted unless it can not be avoided. A sample of such a card, representing the result of a combination of all cards, with their instructions, would seem to be as follows:—

A. B. & C. Ry.
This car
No................ Initial................
O. K. FOR SHIPMENT OF COMMODITIES.
Under.........................Classification.
Inspected by ....
Date..............191... Station..............
(Size of card, 6 by 8 inches.)

Your committee wishes to point to the three apparent classifications of lading for which the box car is on some roads and in some localities receiving special attention before loading. The three classifications, as will hereinafter be referred to, would seem to cover the situation, at least until improvement can be suggested and worked out. The idea contemplates:—

Classification A.—Flour and sugar.

Classification B.—Bulk grain.

Classification C.—Lime, cement, plaster; boxed, sack and crated packages of seeds, coffee and merchandise; hay, dry goods and notions; high grades of finished lumber; tobacco, furniture, household goods and certain grades of tin and galvanized iron.

In the arrangement of the above classification, the items shown under A, viz., flour and sugar, have been grouped together in order to secure cars which might be necessary for such shipments, i.e., those free from soiled floors and interiors carrying odors liable to damage the goods; whereas cars selected for classification B, intended for bulk grain, clearly indicate by their character what might be suitable for their safe transportation; likewise classification C, covering the commodities mentioned, could be safely transported in a car which, while it should be tight, need not necessarily be as carefully selected as to other conditions as a car for classification A, intended for flour and sugar.

On back of cards, inspection instructions should be printed as follows:—

INSPECT FOR.

Classification "A"	Classification "B"	Classification "C"
Leaky roof.	Leaky roofs.	Leaky roof.
Loose siding.	Loose siding.	Loose siding.
Loose roof boards.	Loose roof boards.	Loose roof boards.
Shifted roof sheets.	Shifted roof sheets.	Shifted roof sheets.
Broken Door stops.	Broken door stops.	Broken door stops.
Leaky doors, tops and sides.	Leaky doors, tops and sides.	Leaky doors, tops and sides.
Broken end posts.	Broken end posts.	Broken end posts.
Broken or loose door posts.	Broken or loose door posts.	Broken or loose door posts.
Protruding nails in floor and lining.	Holes in floor and around center plates and draft bolts.	Protruding nails in floor and lining
Floors soiled by oil, grease or any material carrying odors likely to damage lading.		

METHOD OF INSPECTION BEFORE LOADING.

Inspection to be made at point of loading whenever practicable.

At point of distribution from which car is forwarded to loading station, and again by agent.

Cars received and unloaded at station where no inspecteors are located, should be inspected by the agent.

Aside from the master car builders' inspection of car, including roof, running boards, air brakes, safety appliances, and running gear, as well as the external inspection of sides, ends, doors, ventilators and windows, an internal inspection must be made of the roof and siding, with doors, ventilators and windows in closed position.

Search for light indicating openings and cracks which might produce leaks.

For loose, damaged and broken boards, loose knots, knot holes, bad joints, etc.

For all nails and bolts extending above surface of floor and lining and nails protruding through roofing.

For water stains indicating cracks and air spaces.

For cracks sufficient to admit storm water beating through opening, also for openings and bad joints around window and doors.

For metal sheets out of position along edge of subcarlins or down from edge of ridge pole.

For small holes in metal roofs due to rust or small openings in roof from other causes.

Doors must open and close properly.

The floors should be clean, dry and free from defects sufficient to admit moisture, and any fouling by previous shipments, such as fertilizer, oils, and other freight which would damage more perishable commodities. If the centrepin is uncovered, it might be necessary to cover it with a piece of board, depending entirely upon the character of freight to be loaded.

Inspect closely for defects in framing which might, by reason of their weakness, allow the sheathing to be readily broken or damaged.

After a car is thoroughly inspected and known to be in good condition and suitable for the transportation of the commodities in classification A, B or C, as the case may be, the inspector or agent, as provided for, making such inspection or able to certify to the condition of the car, must make out the prescribed certificate of inspection card and tack it to the car just under car number.

After the car is placed and accepted for loading, the certificate of inspection card must be detached from car and delivered to the agent before bill of lading is issued. The card must finally be attached to the agent's office copy of bill of lading or shipping ticket, for future reference in case of question arising as to the condition of car before loading.

Inspection of car bodies, doors, and the placarding of bad roofs, etc., as well as making notation of the extent of damage, is at present given attention; but it is also true that the general results seem to indicate that improvements can be made and higher efficiency obtained, since it seems to be generally accepted that any observation, inspection, and amount of prevention can be more economically directed at the time of selection and preparation of the car than through repeated repairs and attention to cars en route, only to find car arriving at destination offering opportunities for criticism and possibly heavy damage claims. Hence the fact remains that the successful launching of any systematic and uniform practice hinges upon a closer inspection of equipment as to the physical condition of the superstructure for the loading of certain commodities, and such inspection should be made in the best possible manner, to meet local conditions.

Hoping that the committee has at least approximately succeeded in working out a composite certificate of inspection card which will be acceptable to the roads now employing such a practice of inspection, your committee would recommend that such roads be asked to use the card, or designate what might be done to make it acceptable, keeping in mind the desirability of reaching a uniform card. If this can be successfully obtained, it will give the association a standard card, and with the information gathered from them, other roads will be able to consider the card, and use it if they so elect.

While it is very clearly understood that several roads, as above indicated, have used the certificate of inspection card with profit, and have succeeded in very materially reducing the damage to shipments and claims therefrom, other roads have indicated their lack of particular interest in any such move on account of either a vast difference in the variety of commodities handled, or on account of the proportion of shipments not requiring such a careful inspection predominating, hence it would seem to remain with each road to work out and decide for itself what such a plan of inspection might net them. It is certain, however, that the most earnest and sincere cooperation on the part of the railways is absolutely necessary, otherwise the maximum benefit is not to be obtained for the amount of money thus expended.

Your committee believes it perfectly feasible for all roads interested in the proposition to enter into the work of inspection along the line of that referred to, following for many the prescribed certificate of inspection card, but the instructions covering its use; and it is their belief that if the composite card, with instructions covering its use, is not satisfactory in all its details and in shape to be used on the roads now making use of such cards, very little would remain to make it uniform and satisfactory.

Supplementary Report from Committee.

When the report was sent to the Secretary for printing, a copy was also forwarded to the eight railways now using a certificate of inspection card, inviting from them criticism and suggestions as to what might be further offered in the committee's report. The real object, as explained to them, was to obtain their views upon the conclusions reached by the committee, and to further ascertain if in their judgment a uniform plan and the uniform card, as suggested by the committee, will meet the requirements; furthermore, if they would be willing in the interest of uniformity to use it in lieu of what might now be their practice. The following is a synopsis of the replies received:

Great Northern Ry.: Is satisfied with present system of inspection, using a single card for flour lading.

Chicago, Burlington & Quincy Rd.: Considers it would be a good idea, if possible, to use the one card, but apprehends some difficulty in actual practice getting switchmen and trainmen to take time to read the card and handle the equipment accordingly, citing a somewhat similar situation surrounding the use of C. B. & Q. card 1, shown in the report. The use of this latter card contemplated scratching out all items except the one for which the car was suitable for loading. The objection was met by changing to special cards, printing them in different colors.

Chicago Great Western Ry.: Is very much in favor of a uniform system governing the inspection of cars for the different commodities, and regards the proposed card submitted by the committee as fulfilling the requirements.

Chicago, Milwaukee & St. Paul Ry.: Reports that the uniform card as suggested by the committee would seem to satisfactorily meet the requirements, but considers shippers would object to attaching the card to the bill of lading. This road is taken as acquiescing in the proposition, since it was not the intention that the card be attached to the bill of lading.

Minneapolis, St. Paul & Sault Ste. Marie Ry.: Accepts the card as a satisfactory solution, but suggests the addition of another classification to cover rough freight. But in this connection, as has been explained, your committee started out this year with the idea of avoiding any reference to rough freight, preferring to confine their time to methods necessary for the handling of commodities readily damaged by moisture, etc.

Illinois Central Rd.: Advises they see no reason why a uniform card covering the overhead inspection of box cars cannot be agreed upon for all railways, and express themselves as being very glad to modify the cards they now have in use, in the interest of uniformity.

Atchison, Topeka & Santa Fe Ry.: Answers by stating they consider there is a great deal of unnecessary switching and cross hauling of empty cars which might be overcome by such an inspection, etc., and would be satisfied to make a trial of the card recommended in the committee's report.

St. Louis & San Francisco Rd.: The position is taken that better results have been obtained by using a distinctive card for the different commodities. They are not in favor of using one card, as proposed

[illegible]

Individual Paper on Maintenance of Electrical Equipment.

By [illegible], [illegible] of Electrical Equipment, New York Central and Hudson River Rd.

[illegible]

[illegible] in all probability it would [illegible] job.

The volt is defined as "the practical unit of electromotive force which will cause unit current to be established in a circuit of unit resistance," but for all practical purposes may be considered as the unit for expressing the pressure or tension of an electric current, just as the pound is the unit used in expressing boiler pressure.

[illegible]

of 2,400, instead of wishing we had learned something of electricity when we were younger, we understand they are considering the use of an operating current having a voltage or pressure four times that which is usual.

The ampere is defined as "the practical unit of current, and represents that value of current which will cause the electrolytic deposition of silver at the rate of .001118 grams per second." For everyday use, we may think of the ampere as the unit for measuring the quantity of electricity used or available, just as we speak of pounds of steam, or gallons of water, and will know at once that an electric motor using 200 amperes of 600 volt current has twice the power of one using 100 amperes of current at the same voltage, or half the power of a motor using 400 amperes and a voltage of 600.

The watt is the unit of electric power and, for all practical purposes, is the product of the pressure, or voltage, by the quantity or amperes. For instance, the power of a current of 600 volts and 250 amperes is 600 × 250 = 150,000 watts. The watt in electric power matters is used in the same way that the term horse power is in connection with steam power. It is reasonable to believe that anyone who can understandingly use the word horse power in speaking of steam motive power can become accustomed to the intelligent use of the term watt, and when he learns that 746 watts are equal to a horse power, can, with a little practice, compare the rated power of an electric motor or generator and a steam engine.

A kilowatt is simply a thousand watts and the term is used only for convenience. In the preceding paragraph mention was made of an electric current having a power of 150,000 watts. This is usually referred to as a current of 150 kilowatts, or simply 150 k.w. From what has been said, it is evident a kilowatt is almost exactly equivalent to one and one third horse power and a 150 k.w. current equals practically 200 h.p.

The terms watt hour and kilowatt hour are used in connection with electricity just as horse power is used in steam motive power discussions and means electric power of a watt or k.w. used, or available, for an hour.

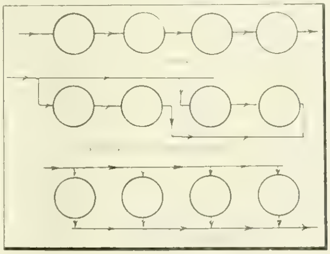
The ohm is the unit expressing the resistance of a conductor to the flow of electric current and "represents the resistance of a column of pure mercury 106.3 centimeters long, of uniform cross-section and weighing 14.451 grams, at a temperature of zero degrees, centigrade."

It will take but little practice to understand the statement that a conductor having a resistance of 5 ohms will carry twice the current that a circuit having 10 ohms resistance will, or half the current a circuit having 2½ ohms resistance will carry, assuming that the voltage is the same in each case.

I have previously stated that "some knowledge of electricity . . . is certainly necessary, but is very elementary and simple, preferably practical rather than theoretical." In this connection it should not be forgotten that this paper relates to the maintenance and is not concerned with the design of electric equipment. Experience has shown that the graduate in an electrical course, who is employed in maintaining electric apparatus, is apt to require wiring diagrams and blue prints showing the circuits and relations of the apparatus, while the inspector whose training has been wholly practical soon learns by precept and practice that a given symptom is caused by a given defect and does not find it necessary to trace the intermediate steps, but goes at once to the seat of the trouble [illegible] power when the motors are operated in series parallel, after having operated satisfactorily in series, the embryo electrical engineer is prone to waste time in hunting up wiring diagrams and tracing circuits, while the inspector whose knowledge has been acquired by practical experience knows that either a certain fuse has blown, because of an overload, or a certain contactor has failed to operate properly and at once applies the necessary remedy.

It would be unwise to assume from the foregoing that an elementary knowledge of electricity and the ability to read wiring diagram blue prints are undesirable or unnecessary to anyone employed in the maintenance of electric equipment. Such knowledge is both desirable and necessary, just as much as for steam equipment, but no more. The point is that the average mechanic, without previous electrical experience, does not require any great amount of electrical knowledge in order to successfully compete with an electrician in maintaining electric motive power.

The average nontechnical reader has no doubt been mystified by the terms "series" and "series parallel" and figuratively thrown up his hands. If to these is added "full parallel" he is probably down and out, but for one who is willing to try, their meaning is as plain and easy to understand as the terms "simple" and "compound" or "mallet" applied to steam locomotives.



Most electric locomotives have as many as four motors. When the electric current passes through these motors one after another, as shown in the accompanying diagram, the motors are said to operate in series, the circles representing the motors, the lines with arrow points representing the path of the electric current.

When the circuits are arranged so that the current passes through two groups of motors, each group consisting of two motors, they are said to be operating in series parallel, or series multiple; that is, two motors are operating in series in each of the two groups, while the two groups of motors are operating in parallel, or multiple; the current supplied to one group of motors flowing parallel to the current supplied to the other group.

If now each of the four motors receives its supply of electricity direct, that is, without flowing through any other motor, the motors are said to operate in full parallel, or simply in parallel, the current to and through each motor flowing parallel to that of each of the other motors.

It will not be surprising if some reader is unable to understand the diagrams representing the different groupings of motors. They will probably be readily understood if the circles are supposed to represent water motors—water turbines for instance—and the lines with arrow points are assumed to be a diagram of the water pipes, the arrows indicating the direction of flow.

This brings to mind the fact that the [illegible] showing the distribution and connections of water pipes. The analogy can be carried farther; the water pressure stands for [illegible] of a water turbine are the equivalent of the kilowatt hours or horse power hours of an [illegible]

It is not the intention to write an elementary treatise on electricity or electric apparatus nor promote a dictionary of electrical terms with nontechnical definitions, but simply to give assurance to the average motive power man that his experience, together with a very elementary electrical knowledge, qualifies him for the maintenance of electric equipment. In addition, it is hoped the bugaboo of imaginary mystery surrounding electrical matters will lose most of its terrors.

In addition to the cloud of mystery, there is quite generally an exaggerated fear of electricity in the minds of the uninitiated—a fear of personal injury—that prevents them seriously considering the advantages and wider opportunities in the electric equipment department. That there are advantages and wider opportunities there is little room for doubt. This fear is doubtless in part due to the fact that lighting is generally known to be of electrical origin and to the further fact that electricity cannot be seen, as steam and fire can. A child is not encouraged to play with matches or fire in any form, nor anyone without experience to assume responsibility for steam apparatus. The same precautions used in connection with electric matters will assure as small a percentage of injuries and fatal accidents. Life insurance companies charge no higher premiums for men working about electric equipment than those employed in ordinary repair shops for steam equipment. The fact is, if simple and inexpensive precautions are taken, there is no greater danger in working about electric than steam equipment. No one with ordinary sense and experience would think of putting his bare hand on the unprotected steam pipe of an injector, even though he cannot see the steam flowing through it. There is no greater danger in connection with electric circuits if the same common sense is used. This refers to 600 volt direct current and would possibly have to be modified for materially higher voltage, nor to high tension lines where the hazard is undoubtedly greater.

The statement is occasionally made that an electric is a simpler machine than a steam locomotive. If this refers to ease of handling and operating or matters requiring the attention of the engine crew, such as injectors, steam pressure and water level, there is no possible doubt the statement is correct, but if it refers to the mechanical simplicity or number of adjustable or moving parts that must be inspected and kept in proper relation, the steam locomotive is very much the simpler. There is, however, this fundamental difference favoring the electric machine; that the moving parts of the control are of very light weight, easily accessible for inspection and repairs and not subjected to nearly as great wear as are the corresponding parts of a steam locomotive.

It will no doubt interest motive power men to know that the shop arrangement and tools for maintaining electric equipment are not essentially different from those they are accustomed to in repairing steam locomotives, except, of course, the electric locomotive has no boiler or tender and it is necessary to provide facilities for rewinding armatures and field coils.

The steam motive power man will no doubt be much surprised when told the electric locomotive requires no shopping for a general overhauling, except for a general painting. This is made possible by having a stock of spare parts, permitting the removal of a defective part from a locomotive, the substitution of a repaired part and releasing the engine, the defective apparatus being repaired at leisure. For instance, a set of driving wheels needing tire turning are replaced by an extra set in good condition, this operation requiring not more than five hours, with adequate drop pit facilities. Air compressors, controllers and contactors can be handled in the same way. The steam locomotive cannot be maintained on this plan, as the boring of cylinders and resetting flues make it necessary to shop the engine, withdrawing it from service for a considerable length of time.

It is quite possible the foregoing statements of personal experience and opinions will not prove as convincing as the records made by an electric equipment maintenance department organized by and largely consisting of men whose earlier experience and training were obtained in the motive power department of steam railways. It seems reasonable common sense will conclude there can be no particular mystery or unusual danger in maintaining electric locomotives when the records for the year 1912, after five years service, show a cost of less than 4 cents per mile and an average of 48,271 miles per train detention due to electrical apparatus, with a banner record of 249,423 miles (equivalent to ten times around the world), without a train detention due to the electrical equipment.

Report of Committee on Capacity Marking of Freight Cars.

The Master Car Builders' Committee, C. E. Fuller, Assistant General Manager, Union Pacific Rd., reported as follows:—

Your committee sent out to the members the following circular of inquiry:—"Your committee, appointed to look into and report on the subject of capacity marking of freight cars, having summarized the replies to M. C. B. circular 25, Capacity Marking of Freight Cars, notes under heading (d) five replies, 209,153 cars, against stenciling cars with their light weight and maximum weight, for the reason that it has not been demonstrated that this practice might not be applied to cars the body or trucks of which are structurally weak and which are at present stenciled to carry the maximum load to which they should be subjected.

"In view of the above, we believe it urgent for each individual car owner belonging to the Association to investigate and advise on the following four questions. (These questions are repeated with the answers below.)

To this circular the committee received 35 replies, representing 924 votes. A careful analysis of these replies is as follows:—

"1. Whether your company now owns or operates, or whether you know of any equipment the body or trucks of which are structurally weak. If so, give number and class of cars."

In answer to this question 16 lines, representing 322 votes, report owning or knowing of weak cars or cars that would prove structurally weak if loaded to full axle capacity. These cars are for the most part wooden cars in coal trade, which would not permit the maximum capacity stenciling.

Fourteen lines, representing 349 votes, do not own or know of any cars that are structurally weak. Five roads did not vote directly on this question.

"2. Whether your company owns or operates any cars the body or trucks of which are strong enough under the present stenciled capacity, but which would not be strong enough under the proposed light weight and maximum weight stenciling. If so, give number and class of such cars."

The majority of the roads vote in the affirmative in answer to this question. Out of the 924 votes, 662 report owning certain cars that are not strong enough and to which it would not be advisable to apply the maximum capacity plan of stenciling. While there does not seem to be any doubt, as a rule, regarding the structural strength of the modern car, and its ability to carry the increased load permitted by the maximum capacity plan of stenciling, 23 roads report certain types of structurally weak cars, such as flat, gondola, and wooden underframe cars, which would develop higher stresses under the maximum loading than would be proper or permissible.

"3. Whether there can be any objection in applying the rule of light weight and maximum weight stenciling so far as it is applicable, consistent with strength of body or trucks which are not structurally weak, thereby restricting the stenciling of cars where the body or trucks may be structurally weak to the present light weight nominal capacity."

Twenty seven lines of the 35 who voted, or 75 per cent. of the total cars represented by the votes, are in favor of stenciling the maximum weight capacity on cars whose strength will permit it. Two companies did not vote on this question, and the other 6 are opposed to it on the grounds of the confusion to shippers, etc.

While the majority of the votes cast are in favor of limiting the proposed stenciling to cars that are strong enough, the question has naturally arisen as to what cars are strong enough, and how this strength should be calculated—that is, by the individual car owner or by a standard adopted by the Association.

"4. Whether or not it would be more advisable to apply the rule of light weight and maximum weight stenciling to steel and steel underframe cars exclusively, and moreover to such cars of this class as have a factor of safety sufficient to carry the maximum load; also, in the opinion of the members, what the minimum factor of safety should be for maximum loading stenciling."

Of the 924 votes represented, 443 (12 roads) are in favor of confining the maximum weight method of stenciling to steel and steel underframe cars, 2 lines did not vote directly on the question, and 463 votes (21 roads) do not approve of this plan; some on the grounds that it should apply to all classes of cars whose strength would permit it, others on the ground of confusion to shippers, etc.

Relative to minimum factor of safety, only 11 companies expressed an opinion:—

Four companies suggest a maximum fibre stress of 16,000 lbs. per sq. in. in body structure.

One company suggests a maximum fibre stress of 12,500 lbs. per sq. in. in body structure with a partially distributed load, and for a buffing shock of 300,000 lbs. when car is empty or loaded.

One company suggests that the factor of safety should be at least 8 in any portion of the arch bars.

One company suggests on trucks a factor of safety of 15 on parts in compression, a factor of safety of 10 on parts in tension, and a factor of safety of not less than 5 in the rest of the structure of car.

Two roads recommend a factor of safety of 3 for steel and steel underframe cars.

One road is in favor of a factor of safety of 5, and one road suggests that the factor of safety should be variable for different classes of equipment.

In line with the limited views expressed as to factors of safety, we feel that the light weight and maximum load stenciling should be confined to cars of steel or having steel underframes that have a factor of safety of 3 or better in the body structure, when figured for the maximum load, and with respect to trucks under such cars, the rule should be applied to all trucks having arch bars of M.C.B. dimensions or better, and to all trucks having cast steel side frames, and to the various forms of special trucks such as pedestal type trucks of the box and other varieties, where the strength of factor of safety is equal to or greater than the equivalent M.C.B. arch bar.

On new cars the committee feels that the rule should be applied in its entirety, owing to the fact that practically all new cars are steel or steel underframe construction, and will in all probability be built to meet the proposed requirements of 24 in. minimum cross sectional area of centre sills, recently proposed by the Committee on Car Construction, to take care of buffing shocks, which imposes a construction which we feel will result in a high factor of safety on underframes from a load standpoint. With relation to trucks under new cars, the rule should be applied only when such trucks meet M.C.B. requirements or better as to arch bar construction, or have steel side frames, or have pedestal type trucks where the factor of safety is equal to or greater than the equivalent M.C.B. arch bar.

Pending further investigation on the part of the committee, we would endorse the recommendation of a member that the subject of stenciling the light weight and maximum load be referred to the American Railway Association in order to ascertain whether there are operating or traffic conditions with which the proposed method of stenciling would interfere.

Report of Committee on Steel Tires.

The Master Mechanics' Committee, Lacey R. Johnson, General Superintendent, Angus Shops District, C.P.R., Montreal, chairman, reported as follows:—

Your committee has held meetings during the year to further revise the report submitted at the last convention. After comparing all the information received from the members and manufacturers during the year, we are unable to suggest any change in the specification presented last year, except to add a new sub-clause: (d) The elasticity shall be at least 50% of the tensile strength.

We have discussed the question of using alloy steels, such as chrome, vanadium, etc., but do not feel ourselves in a position to express an opinion.

We are again presenting the report for your consideration, and would suggest the advisability of appointing a standing committee on steel tires.

SPECIFICATION FOR STEEL TIRES.

1. MATERIAL.—Stock for tires shall be made by the open-hearth or crucible process.

2. CLASSES.—There will be three classes of tires for the different classes of service, as follows:—

Class 1. Driving tires for passenger engines.

Class 2. Driving tires for freight engines.

Class 3. Driving tires for switching engines, and tires for engine truck, tender truck, trailer and car wheels.

3. CHEMICAL COMPOSITION.

Class 1. Carbon, not less than 50 or over 70%. Phosphorus, not over 05%. Manganese, between 60 and 80%. Sulphur, not over 05%.

Class 2. Carbon, not less than 60 or over 80%. Phosphorus, not over 05%. Manganese, between 60 and 80%. Sulphur, not over 05%.

Class 3. Carbon, not less than 70 or over 85%. Phosphorus, not over 05%. Manganese, between 60 and 80%. Sulphur, not over 05%.

4. FINISH.—The tires must be free from defects of any kind, and finished tires must be accurately machined to the prescribed dimensions of the master mechanics' standard, and tire weights must not be outside the limits of the attached prints.

5. BRANDING.—The tires shall be distinctly stamped when hot with such brands as the purchaser may require, and in such a manner that those marks shall be legible when the tires are worn out.

6. SAMPLES FOR CHEMICAL ANALYSIS.—Drillings from a small test ingot cast with the heat, or turnings from a tensile specimen, or turnings from a tire (where tires are machined at the works of the manufacturer) shall be used to determine whether the chemical composition of the heat is within the limits specified in paragraph 3. When required, the purchaser or his representative shall be furnished an analysis of each heat from which tires are made.

7. PHYSICAL PROPERTIES.—The steel for the different classes of service shall meet the following minimum physical requirements:

Class	Tensile Strength, lbs. per sq. in.	[illegible]
1	105,000	[illegible] 1,350,000 [illegible]
2	115,000	[illegible] 1,300,000 [illegible]
3	125,000	[illegible] 1,150,000 [illegible] by the tensile strength

2. [illegible] tensile strength

8. FALLING WEIGHT TEST.—Should the contract call for a falling weight test, a test tire from each heat represented shall be selected by the purchaser or his representative and furnished at his expense, provided it meets the requirements.

8a. The test tire shall be placed vertically under the drop in a running position on a spring foundation with an anvil of at least 10 tons weight, and shall be subjected to successive blows from a tup weighing 2,000 lbs. falling from heights of 5, 10, 15 and 30 ft. and upwards, until the required deflection is obtained as specified in paragraph 8b.

8b. The test tire shall stand the drop test described in paragraph 8a without breaking or cracking and shall show a minimum deflection equal to X in the following table:

Internal diameter of tire	Class No. 1 Tensile strength [illegible] 105,000 lbs.	Class No. 2 Tensile strength [illegible] 115,000 lbs.	Class No. 3 Tensile strength [illegible] 125,000 lbs.
[illegible] diameter and over	[illegible]	[illegible]	[illegible]
Under 3 ft. diameter	[illegible]	[illegible]	[illegible]

8c. A specimen for the tensile test is to be taken from a tire that has been subjected to a falling weight test, and it shall be cut cold from the tested tire at the point least affected by the falling weight test. The tensile test specimen when cut from a tire that had been subjected to a falling weight test shall be only [illegible] to the tension and [illegible] of the test.

8d. Should the test tire fail to meet these requirements in any particular, two more test tires shall be selected from the same heat by the manufacturer [illegible] and at his expense. Should these two test tires fulfill the requirements, the heat shall be accepted.

9. INSPECTION.—The inspector representing the purchaser shall have free entry to the works of the manufacturer at all times while the contract is being executed. All reasonable facilities shall be afforded to the inspector by the manufacturer to satisfy him that the tires are being furnished in accordance with the specifications. All tests and inspections shall be made at the place of manufacture prior to shipment, and shall be conducted so as not to interfere unnecessarily with the operations of the mill.

Tires must be rolled in accordance with the best practice, sufficient metal being discarded to insure sound tires. The tire taken from the bottom of the ingot must be stamped with the letter A, before the tire number, the next above B and so on up the ingot.

Tensile test specimens, one from each heat, must be forwarded to the engineer of tests of the railway company, together with a copy of the chemical analysis of each heat, showing the tire numbers rolled from each heat; also destination of each tire, together with the railway company's purchasing agent's order number. If, however, the manufacturer is rolling tires right along for the railway company, and their inspector is at their plant, the test specimens from heats ready at that time may be pulled at the manufacturer's plant by the inspector and the broken test pieces sent in for analysis, in which case the above information must be furnished the inspector.

An analysis of the test piece made by the railway company's test bureau must agree with that furnished by the manufacturer, and with an analysis made from turnings from the tires after received; a failure to agree within reasonable limits will be cause for rejection.

In addition to the above tests, the railway company reserves the right to [illegible] a repetition of any [illegible] and all material found not up to the [illegible] of all of these requirements will be rejected.

[illegible] will be [illegible] longer than [illegible] from date of [illegible]. If at the end of that period [illegible] the material [illegible] the [illegible] will be returned to [illegible] paying freight both ways.

Freight Car Truck Sides and Freight Car Truck Bolsters.

The Master Car Builders' Committee, E. C. Schmidt, University of Illinois, chairman, reported as follows:

The committee on specifications for truck sides and truck bolsters was appointed by the executive committee in 1911. In its first report, presented at the 1912 convention, [illegible] chemical properties, physical properties, and inspection of truck sides and bolsters. By subsequent action these specifications have been added to the recommended practice of the Association.

In its first report the committee also proposed [illegible] of truck sides and bolsters. It recommended that if the committee were continued, funds be provided for making tests, in order to develop information which could form the basis for final specifications for testing truck sides and bolsters. The executive committee has not found it feasible to provide funds for this work during the past year and the committee has, therefore, been unable to make progress along the lines originally laid down. In the expectation that during the coming year funds may be [illegible], we recommend that the committee be continued.

Railway Supply Exhibits at the Atlantic City Conventions.

The larger portion of the space on the million dollar pier was, as usual, devoted to exhibits of railway supplies, machinery, etc., there being 88,222 sq. ft. of space occupied, against 83,507 in 1912. Among the principal exhibitors were the following:

American Brake Shoe & Foundry Co., Mahwah, N.J.—Brake shoes and brake heads.

American Locomotive Company, New York, N.Y.—Reception booth.

American Vanadium Co., Pittsburgh, Pa.—Reception booth.

Anchor Packing Co., Philadelphia, Pa.—Air pump packing; throttle packing; air pump gaskets; Tauril; high pressure gauge glasses; superheat valve discs; specialties in packing.

Bowser & Co., Inc., S.F., Ft. Wayne, Ind., [illegible] oil storage equipment [illegible] distance and first floor self-measuring pumps and storage tanks; "Red Sentry" enclosed long distance pump with electric lamp attachment; complete oil filtering system; self-registering pipe line measures.

Buffalo Brake Beam Co., New York, N.Y.—Buffalo passenger brake beams for all classes of service including P. C. and L. N. equipment, with adjustable, automatically adjustable, and rigid heads; Buffalo freight brake beams for all classes and capacity of equipment, including E. & L. Beams for all classes and capacity of tenders and electrical equipment, for standard, broad and narrow gauge.

Carborundum Co., The, Niagara Falls, N.Y.—Carborundum and Aloxite wheels; Carborundum brand garnet paper; Aloxite cloth.

Chicago Railway Equipment Co., Chicago, Ill.—Brake beams of the PC Creco, EL Creco, Diamond Special, Diamond, Drexel, National, Hollow, Kewanee, Reliance, Ster[illegible] and special types; [illegible] bearings; brake slack adjuster; automatically adjustable brake head; semi-adjustable brake head; removable leg brake head; Creco sliding third point support and safety device; reversible and duplex brake beam struts.

Commercial Acetylene Railway Light & Signal Co., New York, N.Y.—Equipments for acetylene railroad signaling; acetylene headlights, car lighting, boat lighting, marine lighting and acetylene welding.

Consolidated Car-Heating Co., Albany, N.Y.—Packless steam specialties; sylphon diaphragms; single and twin vapor traps;

[illegible]

A Locomotive Injector Patent Suit

[illegible]

Atlantic City Convention Notes

[illegible]

Election of Railway Mechanical Associations' Officials

[illegible]

The Modified Zinc Chloride Process of Treating Railway Ties.

In an article in the May issue of this paper, dealing with the creosoting process for treating ties, it was pointed out that the art of preserving organic growth was known to the ancients, and that they practiced the art to a considerable extent, as evidenced by the excellent preservation of old mummies. It was also pointed out that an analogy has been discovered between the causes of decay in plant growth and in organic substances, both being due to the presence of certain germs, which cause the destruction of the substance if the conditions be favorable. The principle is to anticipate this decay by the introduction of such antiseptics as will not only destroy any existing germs, but will also retain their strength to such a degree as to prevent decay occurring at any future time. As the article above referred to emphasized, of all the many antiseptics that have been tried in preserving wood from decay, but two seem to have remained with any degree of security for future business. Of the creosoting process considerable was said at that time concerning the method of treating and the possibilities for future development with the present outlook for creosote oil supplies.

Zinc chloride, as a preservative of wood, has been in use for upwards of 100 years, but the first patent of the process taken out was by Sir Wm. Burnett in 1837, from which it was given the name of the Burnettizing process. That zinc chloride had great antiseptic powers was beyond question, but the great trouble with the use of wood treated with it was the difficulty of keeping it in the wood while in use, its great solubility in water being a decided drawback. Each rainstorm would dissolve out a certain amount from the fibres of the wood, and in time, all would have left the wood. Thus, while zinc chloride as a preservative was an excellent medium, this trouble of leaching placed it in disrepute.

Many ways of overcrowding this tendency of the absorbed salts to leach out were tried, the principle followed in the majority of instances being to immerse the water, and in consequence, when forced into the tie, the salts have a tendency to filter out, remaining in the outer fibres of the wood, the core wood receiving a very diluted solution of the liquid, the major portion remaining near the outside.

The most recently developed process employing zinc chloride is claimed to overcome all the above-mentioned difficulties. This is the Bruening-Marmetschke process (commonly called the B. M. process), and is the one almost universally employed where zinc chloride is the antiseptic medium. In this process, to the zinc chloride solution there is added aluminium sulphate, the relation of the zinc chloride to the aluminium sulphate being 2 to 1.

As mentioned, zinc cholride forms an imperfect solution in water, and the resultant solution is more or less clouded from the presence of the suspended salts. Even

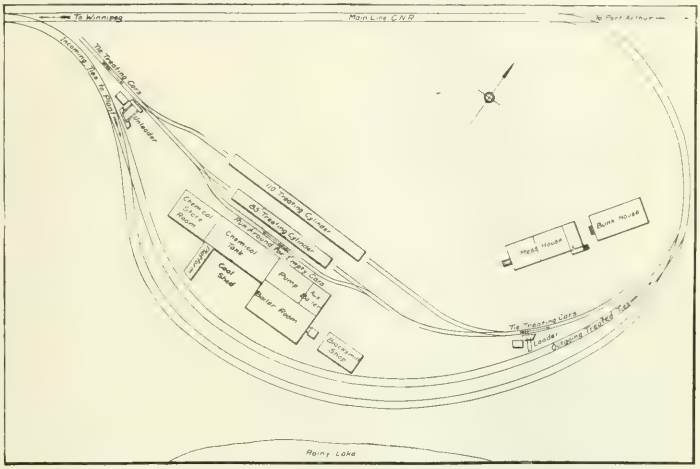


Fig. 1.—Layout of Buildings and Yard of a Modified Zinc Chloride Tie Treating Plant.

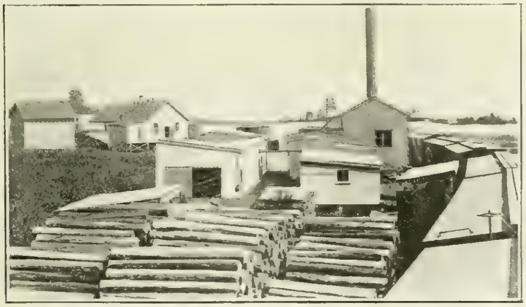


Fig. 2.—Treating Plant, from the West.

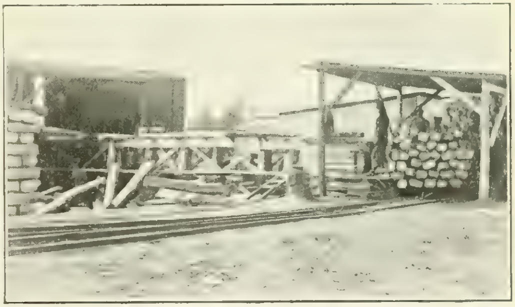


Fig. 3.—Unloading Ties from Box Cars.

treated wood in some special substances that would add a waterproof coating to the surface of wood, and thus make the interior free from the attacks of water. These various methods have all been used with more or less success, but have the objection that any mechanical abrasion of the surface leaves the tie unprotected from the leaching that is sure to result.

Another very decided objection to the ordinary zinc chloride process is the fact that the zinc chloride salt is in a rather imperfect state of solution in the treating with a very weak solution this is true. It is a matter of chemical knowledge that if a small amount of aluminium sulphate be present in the solution, the whole of the zinc sulphate is dissolved; in other words, the solution is no longer in a state of equilibrium, but is a clear liquid. The resultant combined solution will not filter in, being forced through the pores of the wood into the core. From the clearness of the liquid, lower temperatures of impregnation are possible, obviating the danger of the heat breaking up the dissolved substances into their component parts.

The use of aluminium sulphate in conjunction with zinc chloride creates a phenomenon, the reasons for which have not been discovered. Portions of the zinc chloride and aluminium sulphate remain fixed in the wood substances, the aluminium sulphate forming a coagulant of some of the substances in the wood that form food for decay. It may exist in the wood in a colloidal form, united chemically to the wood substance. At any rate, the zinc chloride, as added to the wood with the aluminium sulphate, seems to be free from leaching, as proved by experiments conducted by different authorities.

A valuable feature about zinc chloride treated wood is that it is fireproof, and will only char slowly when subjected to flame. Wood so treated is affected very slightly from an electrical standpoint. Shortly after treatment, the dissolved salts increase the conductivity of the tie to such a degree as to make necessary the cutting down of signalling track circuits about 50%, but after seeing service for some months, the conductivity decreases to that normal for untreated wood. In the B. M. process, as opposed to the plain zinc chloride treatment, the strength of the wood is not affected. In the older treatment, on account of the heat of impregnation being rather high, the fibres of the wood were more or less disintegrated, weakening the wood structure.

In Alex. Bruce and Co.'s plant at Fort Frances, Ont., of which B. Blastorah is [illegible] the B. M. process of treat[illegible] [illegible]. The plant shown in [illegible] was erected in 1911 as the [illegible] Canadian Northern Ry. for treating ties. The treating company [illegible] plants at various points throughout the [illegible] to be erected in Canada. Other plants are contemplated for Edmonton, Alta., and Victoria, B.C. [illegible] of which the contract calls for enough to keep the plant operating at full capacity for upwards of two years to come. As mentioned in the description of the creosoting process, the [illegible] ties treated by that process, it being the intention to test both methods thoroughly.

The plant under consideration is about four miles east of Fort Frances, on the north shore of Rainy Lake, adjoining the C.N.R. main line from Port Arthur to Winnipeg, [illegible] by a loop, passing through the plant from the west, and back on the main line at the east end, all as shown in figs. 1 and 2. Ties are delivered by the C.N.R. to the plant as required, so that but little storage space is provided for. The ties enter the grounds from the west to the position marked by the unloader in the plan, fig. 1. The treat[illegible] solution, makes unnecessary the piling of [illegible] received in the plant. All the storage space as yet required is that to the north [illegible] direction.

Referring to fig. 3, on the left, the ties [illegible] there is a travelling [illegible] will [illegible] ing [illegible] from the travelling table. As each car is [illegible] has been added, as in the plan fig. 1.

The [illegible] former instance, are drawn into the cylinder by a steam winch and cable. The two cylinders are located side by side, the older one being 85 ft. long, and the new one 110 ft. A third cylinder is in prospect, similar to the last one installed. The construction of the cylinders is so similar to ones described in the creosoting process that the reader is referred to that article for this information. After the cylinder has been charged with timber and the doors [illegible] in the cylinder, and maintained for at least half an hour, in order to draw out as much of the moisture in the wood as possible, and open the pores of the wood for the reception of the solution.

Following the vacuum, the solution is drawn into the cylinder, and the pressure is raised to about 160 lbs. by very high pressure pumps. After the pressure has been raised and maintained for a certain time, the temperature of the liquid is gradually raised to about 165 degrees Fahr., at the same time raising the pressure in the cylinder to [illegible] half a pound of the combined salts per cubic inch of timber. This combination of temperature and pressure has been found to give the best penetration, coagulating the colloidial and albuminous matter in the wood cells, and permanently combining sufficient of the antiseptic salts in the wood

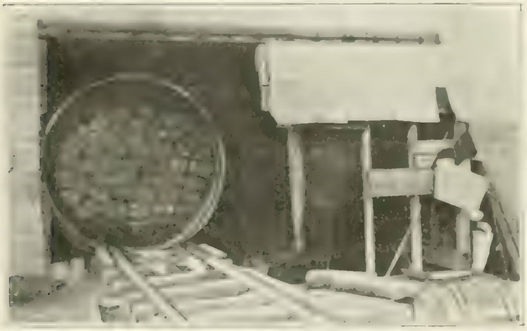


Fig. 4.—Treated Ties Leaving Cylinder

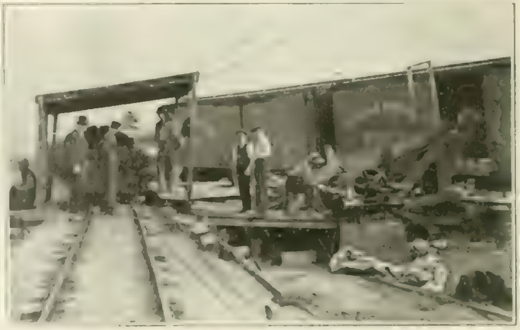


Fig. 5.—Loading Treated Ties into Box Cars

fibre to insure protection against decay, both the zinc chloride and aluminium sulphate being antiseptics. The gradual raising of temperature and pressure takes upwards of an hour, the total impregnation being carried out in about three hours, depending on the nature and dryness of the wood to be treated.

The supply tank, from which the cylinders are filled, is located in a large buried vat, under the floor of the building across the service track to the south of the cylinders. The main floor of this building [illegible] centrated form, and is the mixing room for [illegible] the vat, approximately in the proportion of 3 parts of zinc chloride and 1½ parts of [illegible] In the buildings adjoining this tank room [illegible] ating gauges, and back of the [illegible]

[illegible] cylinder, are shown in fig. 4. From that [illegible] service track by the capstan, to the loading [illegible] convenient level at the door of a box car, where attendants carry them and pile them in the cars for delivery around the loop to the main line. The use of the same box cars that have just been emptied from the incoming ties, at a point a little further along the line, is a most important consideration in their shipment. It will be remembered that, with the creosoted ties, box cars cannot be used for shipping the ties away from the plant, on account of the damage to the interior of the car in the event of grain or other matter being carried. The B. M. treated tie looks but slightly different from an untreated one, and will not soil the interior of the car.

The plant is so isolated from settled communities that provision for the accommodation of the men employed is made in the bunk house and mess house to the east of the plant.

The B. M. process has many points in its favor. As compared with creosoting, on account of the cheapness of the materials employed, the cost is just about a third. The supply of raw material is practically unlimited. Both processes have much to be said in their favor, and both must be considered on their respective merits in deciding which is the better for the conditions of operation. The results on the C.N.R. in the use of the two processes will be awaited with interest, but as they have been employed such a short time, it will be some years before satisfactory data on the life of the ties in this country will be forthcoming. Observations elsewhere show that both processes increase the life of the tie many times. Creosoting, being the older process, can cite more examples. There are [illegible] 30 years ago and still sound and serviceable. Time will probably demonstrate the same thing of the B. M. process, for in instances where B. M. treated timber has been used in severe condition such as in damp mines, it has stood up well.

Statistics collected by the United States Government show that while the number of ties treated with zinc chloride in the U. S. [illegible] which figures are available, the number treated with creosote has increased rapidly, [illegible]

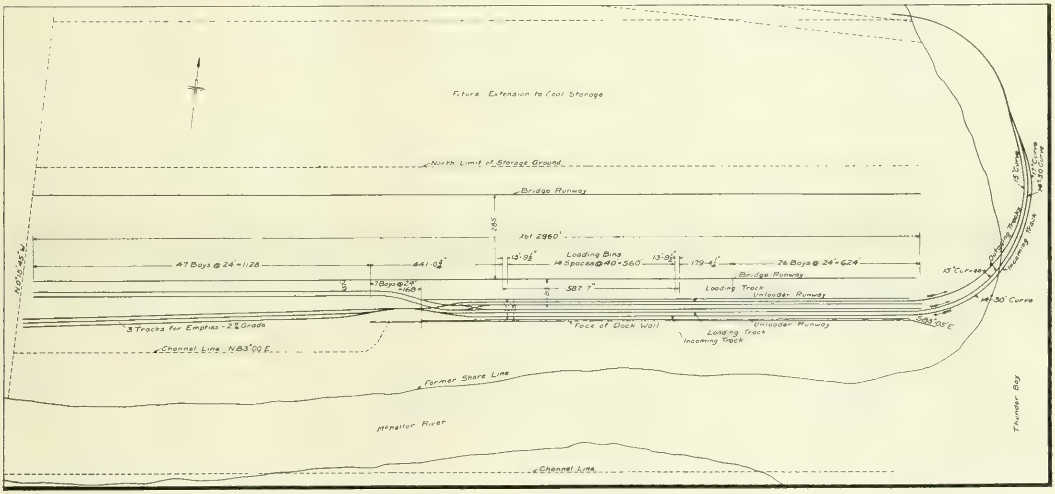
	Zinc chloride	Creosote
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]

These figures might be looked upon as an [illegible] "Which is the better of the two"? But after careful investigation it appears that the question cannot be [illegible] and [illegible] on both sides will be presented in an early issue of this paper, the subject being of the [illegible] importance.

The Canadian Pacific Railway's Coal Handling Plant at Fort William.

A complete description of the coal handling plant that the C.P.R. is having constructed for its own coal at Fort William, was given in the Canadian Railway and Marine World for Feb., 1912. That article covered the construction and operating details of the machine itself. The layout of the plant, with a view to continuous operation without pauses while waiting for the shunting in of cars, is rather ingenious, as an examination of the accompanying plan will show.

The plant consists of two unloaders, which lift the coal in 8 ton buckets from the vessel's hold, and carry it back either to a temporary storage pile beyond the north rail of the runway, or to 35 ton scale cars on double tracks between the unloader tracks. From a temporary storage pile, the coal is picked up by a 9 ton bucket, on a 520 ft. cantilever bridge, which bridges the main storage pile to the north of the temporary storage.



Plan of C.P.R. Coal Handling Plant at Fort William, Showing Arrangement of Tracks for Continuous Movement of Cars Being Loaded.

There are 30 car loading bins located in a double row, as indicated on the plan, and under the scale cars, by which they are filled. The scale cars drop the exact amount of coal, corresponding to the capacity of the freight car, to be loaded into each of the bins, and from the latter the coal descends into box car loaders, which fill the box cars on the two loading tracks shown.

The ingenious feature of the layout is the planning of these loading and entering tracks. From the east, along the edge of the dock wall, runs the incoming track, which enters from the east, where the trackage comes from the adjacent yards, all the tracks coming in on a sharp curve from the rear of the storage pile. Proceeding west along the dock wall, to the south of the loading bins, the three tracks through the plant converge—that is, the two loading tracks and the incoming track. Beyond this converging track are three parallel tracks, rising on a 2% gradient, the tracks terminating at the west end of the plant. These three tracks are for the temporary storage of the empties on their passage through the plant.

In operation, a switcher brings in a string of empties from the yard, running along the incoming tracks under the unloader, leaving the string on one of the three temporary storage tracks. From these tracks, the string can be run down into the plant, as required, by gravity, this being the object of the 2% ramp. Thus, 15 cars can be run in on either of the loading tracks. The box car loaders proceed along one string of cars, filling them up, then back along the other string. While one is being filled up, the other set of loaded cars is drawn further along through the plant by a car haulage system at the east end, and a set of empties run down by gravity to take their place. The loaded cars are drawn off from the east end of the plant by the switcher, which is kept busy bringing empties, and drawing away the loaded cars. By the use of this third incoming track, and the graded empty yard, the movement of the cars through the plant is continuous.

It is of interest to note that the dock was sunk in the solid ground, and after completion, the ground outside was dredged out. At this section of Island no. 1, on which the plant stands, the ground was very low, so that the discharge from the hydraulic dredges working on improvements to the McKellar River channel were usefully employed in bringing the level of the ground to the proper height.

Canadian Ticket Agents' Association.—At a meeting of the executive committee at London, Ont., June 13, J. P. Hanley, C.P. & T.A., Grand Trunk Ry., Kingston, Ont., and W. Fulton, C.P.A., Canadian Pacific Ry., London, were appointed on the committee, vice C. E. Horning, now D.P.A., Grand Trunk Ry., and J. F. Dolan, who has been appointed D.P.A., Richelieu and Ontario Navigation Co., at Boston, Mass. J. A. McKenzie, C.P.A., Grand Trunk Ry., Woodstock, Ont., and 3rd Vice President of the Association, was appointed in place of Mr. Horning, as representative to the G.P. & T.A. convention to be held at Philadelphia, Oct. 14 and 15.

Proposd Railway From Quebec to Labrador.

The Newfoundland Legislature has been giving consideration to a measure providing a subsidy of 6,000 acres of land a mile, with a free right of way, exemption from taxation and some lesser privileges, towards the building of a railway in the Newfoundland Labrador. It is proposed that a contract shall be entered into with the Canadian Atlantic Corporation, the directors of which include Thomas Skinner and J. Foster, London, Eng. This corporation proposes to build a railway from Quebec to Cape Charles, or between that point and Bradore Bay; to operate a train ferry between the Labrador coast and Newfoundland, and a line from the ferry to the Reid Newfoundland Ry. near Bonne Bay. The present proposal covers only the proposed line on the Labrador coast, which would form part of a continuous line from Quebec to the coast. The corporation represents that it has made a provisional agreement to take a 99 year lease of running powers over the Quebec and Saguenay Ry. and its connections, between Quebec and Murray Bay, 86 miles; and has also acquired charter rights to build a railway from Murray Bay to Seven Islands, 380 miles, for which the Canadian Government has already granted a subsidy. Nothing has been arranged as to the route from Seven Islands to the Quebec-Labrador boundary. The company agrees to begin construction in four years, and to have the line completed in 10 years.

Railway Lands Patented.—Letters patent were issued during April, covering Dominion railway lands in Manitoba, Saskatchewan, Alberta and British Columbia, as follows:—

	Acres.
Calgary and Edmonton Ry.	[illegible]
Canadian Northern Alberta Ry.	86.86
Canadian Northern Ry.	1,456.63
Canadian Pacific Ry.	[illegible]
Grand Trunk Pacific Branch Lines Co.	6.50
Grand Trunk Pacific Ry.	55.40
Qu'Appelle, Long Lake and Saskatchewan Rd. and Steamboat Co.	1,146.50
Total	[illegible]

Orders by Board of Railway Commissioners.

[illegible]

[illegible] Abbotsford Tim- [illegible]

[illegible]

[illegible] Ry. (C.P.R.) to remove trees for not less [illegible] than 200 ft. at crossing of Renfrew and Douglas [illegible]

[illegible] wan Ry. to build its Wroxton Westerly Branch across G.T. Pacific Ry. in Sec. 12-25-11, w. 2 m., [illegible]

[illegible] May 8, acquirement of certain lots in Regina, Sask., [illegible]

19281. May 14.—Amending order 19087, Apr. [illegible] nature of farm crossing, or where practicable, by [illegible]

19282. May 14.—Authorizing Esquimalt and Nanaimo Ry. to build bridge 46.8, near Mount Sicker, Vancouver Island, B.C.

[illegible] Campbellford, Lake Ontario and Western Ry. (C.P.R.) to include within limits of right of way, portions of Lots 45 and 231, Block B, Con. 1, and Lot 13, Con. 1, Darlington Tp., now part [illegible]

[illegible] Lake Ontario and Western Ry. (C.P.R.) to build [illegible]

[illegible] of C.P.R. Forsyth St. Branch, from mileage 0.0 [illegible]

[illegible] C.P.R. to build [illegible] Alta.

[illegible] paid Mr. Fee [illegible] his property, [illegible] ry, as part of [illegible] to the other, and to [illegible] ssing [illegible]

[illegible] C.P.R. [illegible] Moose Jaw Subdivi- [illegible]

[illegible] C.P.R. station at St. Joachim, Ont.

19292. Amending order 19048, Apr. 15, re C.P.R. sidings for H. B. Harrison, Owen Sound, [illegible]

[illegible] tion of [illegible]

[illegible]

G.T.R. conditions of today, should, under agreement, be borne by it; in event of Supreme Court advising that C.P.R. is not, under agreement, [illegible] G.T.R. shall pay [illegible] C.P.R.

[illegible] May [illegible]—Dismissing C.P.R. applica- [illegible] southerly side of London St., between Caton Ave. [illegible]

19300 to 19302. May 9.—Approving inter- [illegible] C.P.R. [illegible] Ottawa Subdivision, at [illegible] Que.

[illegible] Campbellford, Lake Ontario and Western Ry. (C.P.R.) to take certain lands for diversion of Kingston Road and various intersecting highways in Murray and Brighton Tps., between mileage 91 and 95; and amending order 18447, Dec. 30, 1912, in similar connection.

[illegible] Lake Erie and Northern Ry. to build at grade across Brantford St. Ry. at Brantford, Ont.

19305. May 15.—Approving location and detail plans of C.N. Quebec Ry. station at Maisonneuve.

19306. May 15.—Dismissing applications of [illegible] Ry. (G.T.R.) and C.N. Ontario Ry. for order cancelling approval of C.P.R. plan showing bridge [illegible] Que., authorized by order 17931.

19307. May 15.—Authorizing G.T.R. to take certain lands for new freight shed and tracks in connection with extension of terminal facilities at Pembroke, Ont.

19308. May 16.—Ordering G.T.R. and C.P.R. to install pair of gates at crossing of Lake Shore Rd., Vaudreuil, Que., gates to be independent of each other and operated by separate watchmen; work to be completed by June 30, cost to be [illegible] railway grade crossing fund, remainder by G.T.R. [illegible] in each case, and remainder by G.T.R. and C.P.R.

[illegible] May [illegible]—Authorizing G.T.R. to take certain lands for additional station facilities at St. Agapit, Que.

19310. May 16.—Authorizing G.T.R. to re- [illegible]

19311. May 17.—Relieving G.T.R. from providing further protection at crossing of Court St., Coaticook, Que.

[illegible] May [illegible] from July 25, time within which G.T.R. shall complete spur authorized by order 19127, Apr. 25, for International Harvester Co. of Canada, Ltd., Hamilton, Ont.

19313. May 17.—Approving location of G.T. Pacific Ry. stations at Miette Hot Springs, Parkgate, and Interlachen, Alta.

19314. May 15.—Ordering that Campbellford, Lake Ontario and Western Ry. (C.P.R.) pay cost of filling highway crossings between Lots [illegible] Con., Clarke Tp., Ont., between its tracks and G.T.R. [illegible] of drainage work on its property, if rendered necessary by said fillings.

[illegible] location of C.P.R. stations at Denzil, Froude, [illegible], and Plunkett, Sask.

19316. May 16.—Authorizing C.P.R. to open for traffic portion of its double track between Parkbeg and Walker, 8.8 miles, Swift Current Subdivision, Sask.

[illegible]

19319. May 15.—Authorizing City of Fort William, Ont., to build its street railway across Canadian Northern Ry. at intersections of Vic- [illegible] and C.N.R.

[illegible] ern Ry. and Northern Pacific Ry. issue regular [illegible] such points.

[illegible] Paris, Ont., and to divert and build [illegible]

[illegible] build [illegible]

[illegible] Ry. [illegible]

[illegible] first public highway [illegible]

19328. May 10.—Authorizing C.P.R. to build its coal mine spur at grade across road allowance between Secs. 10 and 9, Tp. 1, R. 6, W. 2 m., at Bienfait, Sask.

19329. May 19.—Extending to July 15, time within which C.P.R. shall install bell at La Croix St., Chatham, Ont.

19330. May 17.—Ordering G.T.R. to move crank stand at crossing of Strachan Ave., West Toronto, Ont., to north and as near as possible to its south track and erect signal cabin over same; C.P.R. to pay 1/3 of cost.

19331. May 19.—Relieving G.T.R. from operating trains between Powassan and Trout Creek, Ont., at less speed than 15 miles an hour.

19332. May 17.—Approving Hull Electric Co. Standard Mileage Freight Tariff, C.R.C., F.1, for distances up to 15 miles.

19333. Jan. 31.—Authorizing C.N. Ontario Ry. to build subway between Cons. B and 2, Westmeath Tp., Ont.; to have 14 ft. headroom, and to be 20 ft. wide for travelled portion of highway.

19334. May 16.—Ordering that cost of subway under C.P.R. at Dundas St., Woodstock, Ont., required by order 16986, July 8, 1912, be paid, 20% out of the railway grade crossing fund, 70% of remainder by C.P.R., and 30% by City of Woodstock; provided city's contribution shall not exceed $7,000; C.P.R. to pay cost of maintenance, city to maintain the roadway.

19335. May 16.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to divert Kingston road, Bowmanville, Ont., to carry diversion across its line overhead at mileage 149.5 from Glen Tay, to continue diversion northeasterly to connect with Kingston Road, to divert road allowance between Lots 14 and 15, to connect with forementioned diversion, and to carry road between Lots 14 and 15 across its line overhead, bridge and approaches on Kingston Road to be 25 ft. wide, and bridge and approaches on side road to be 20 ft. wide.

19336. Apr. 29.—Authorizing C.P.R. to build spur for International Malleable Iron Co., Guelph, Ont.

19337. May 20.—Authorizing C.P.R. to use bridges 44.7, Shuswap Subdivision; 37.3, 127.2, Mountain Subdivision; 108.6, 89.4, 90.6, 102.6, 95.2, and 110.1, Cascade Subdivision, B.C.

19338. May 10.—Authorizing C.P.R. to open for traffic portion of its double track between Pense and Belle Plaine, Sask., mileage 109.6 to 117.3.

19339. May 20.—Authorizing C.P.R. to build bridges 14.9, near Cooksville, and 36.6, near Christie, Ont.

19340. May 20.—Extending to Aug. 31, time within which C.P.R. shall complete spurs for Ontario National Brick Co., Toronto Tp., as authorized by order 18723, Feb. 17.

19341. May 19.—Authorizing C.P.R. to divert Current River at Port Arthur, Ont., and to build bridge 126.5.

19342. May 19.—Authorizing C.P.R. to build spur for City of Medicine Hat, Alta.

19343. May 19.—Authorizing C.P.R. to build Vanguard ballast pit spur on its Swift Current Southeasterly Branch, across highways at mileage 0.22, 1.54, 3.82 and 4.3.

19344. May 20.—Approving G.T. Pacific Ry. stations at Pedley and Jasper House, Alta.

19345. May 10.—Authorizing G.T.R. to build siding for Dominion Canners, Simcoe, Ont.

19346. May 19.—Authorizing Sandwich, Windsor and Amherstburg Ry. to cross Essex Terminal Ry. on east side of Wellington Ave., Sandwich East Tp., and Canada Southern Ry. spur to Postum Cereal Co., Windsor, Ont.

19347. May 14.—Ordering G.T. Pacific Ry. to erect station 3,000 ft. east of eastern boundary of Fort George townsite; and rescinding order 18902, Mar. 20, in that connection.

19348. May 16.—Ordering C.N. Ontario Ry. to build cattle passes for J. Fletcher and J. Wilson, Ross Tp., Ont.

19349. May 19.—Authorizing C.P.R. to use bridges 94.8, 104.9, Moose Jaw Subdivision, Sask., and 46.37, Broadview Subdivision, Man.

19350. May 19.—Authorizing C.P.R. to build bridges 12.2 over Palletts Creek, 19.9 over Credit River, and 28.4, London Subdivision, Ont.

19351. May 22.—Ordering that interlocking plant required to be installed at G. T. Pacific Ry. crossing of Port Arthur and Fort William Electric Ry., at Syndicate Ave., Fort William, by order 17657, be installed by July 31, and authorizing G.T. Pacific Ry., pending completion, to operate over same; trains to stop on each side of crossing; watchmen provided by G.T.P.R. to flag trains and cars.

19352. May 22.—Authorizing G.T. Pacific Ry., pending installation of interlocking plant, to operate trains over crossing of Canadian Northern Ry. at Empire Ave., Fort William, Ont.; interlocking plant to be installed by July 31; G.T.P.R. trains to stop on each side of crossing, and watchmen, appointed by C.N.R. and paid by G.T.P.R., to be placed there.

19353. May 22.—Authorizing G.T. Pacific Ry. to build extension in Empire Ave., across Syndicate Ave. and Vickers St. to connection with C.P.R., Fort William, Ont.

19354. May 22.—Authorizing G.T. Pacific Ry. to build spurs from its Lake Superior Branch in Empire Ave., Fort William, Ont., for Jas. Murphy and Copp Foundry Co.

19355. May 23.—Ordering that Campbellford, Lake Ontario and Western Ry. (C.P.R.) may close portions of road allowances to be diverted in Brighton and Murray Tps., Ont., as [illegible].

19356. May [illegible].—Extending express collection and delivery limits in Winnipeg to include portion of Elmwood, [illegible] Chalmers and Watt Sts., along Watt St. to Union Ave., and thence on Union Ave. to C.P.R.

19357. May 23.—Approving Campbellford, Lake Ontario and Western Ry. (C.P.R.) plan [illegible], Apr. 22, [illegible].

19358. May [illegible].—Approving location of C.P.R. station at Wolverton, Ont.

19359. May 23.—Ordering Campbellford, Lake Ontario and Western Ry. (C.P.R.) to provide two grade crossings for W. S. [illegible], Kingston, Ont.

19360. May 22.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to build across forced road in Lot 14, Con. 7, Richmond Tp., at mileage 54.99, overhead; and dismissing application for grade crossing.

19361. May 22.—Approving location of C.P.R. station at [illegible], Ont.

19362, 19363. May [illegible], 23.—Authorizing C.P.R. to build bridges 119.2, Boundary Subdivision, B.C., and 91.48, over Deadfall Creek, Cartier Subdivision, Ont.

19364. May 21.—Authorizing C.P.R. to build its Forsyth St. Branch at grade across St. Leonard Road, Longue Pointe, Montreal, at mileage 3.83.

19365. May 21.—Authorizing G.T.R. to build siding for St. Mary's Portland Cement Co., Blanshard Tp., Ont.

19366. May 22.—Approving location of G.T. Pacific Branch Lines Co. station at Ardley, Alta.

19367. May 20.—Authorizing G.T.R. to build siding and spur for Brown's Copper and Brass Rolling Mills, New Toronto, Ont.

19368. May 20.—Approving revised location of Niagara, St. Catharines and Toronto Ry. from boundary between Niagara Tp. and Niagara-on-the-Lake, Ont., along King St., mileage 11.1 to 12.14; and authorizing it to build across Cottage, Pafford, John, Castlereagh, Platoff and Picton Sts.

19369. May 21.—Approving Kettle Valley Ry. revised location from Hydraulic Summit to Penticton, mileage 50 to 58.12, B.C.

19370. May 17.—Recommending to Governor in Council for sanction, amalgamation agreement of Canadian Northern Ry. and Winnipeg and Northern Ry.

19371. May 23.—Authorizing C.P.R. to build (for double tracking) bridges 28.11, near Hornby, and 37.0, near Christie, Ont.

19372. May 23.—Authorizing C.P.R. to use bridges 17.4, Ottawa Subdivision, and 6, on Sherbrooke Section, Orford Mountain Branch.

19373. May 23.—Authorizing C.P.R. to cross and divert road on its Kerrobert Northeasterly Branch at mileage 34.05 from Kerrobert, Sask.

19374. May 26.—Approving location of C.P.R. station at Odell, Ont.

19375. May 23.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to build ballast pit spur at grade across highway between Cons. Broken Front and 1, Clarke Tp., Ont.

19376. May 26.—Approving location of G.T. Pacific Branch Lines Co. station at Rossman, Sask.

19377. May 26.—Approving location of G.T. Pacific Ry. stations at Crest, Empire Ave., Horne, Linko and Dawson Road, Lake Superior Branch, Thunder Bay District, Ont.

19378. May 26.—Authorizing G.T.R. to build additional track across Woodbine Ave., Toronto.

19379. May 23.—Authorizing Montreal and Southern Counties Ry. to open for traffic portion of its line from the Country Club Branch, through Greenfield Park, to Central Vermont Ry., St. Antoine de Longueuil Parish, Que., 2.25 miles.

19380. May 23.—Authorizing Canadian Northern Branch Lines Co. to cross and divert public road between Secs. 36-34-5 and 1-35-5, w. 2 m., with its Sturgis to Hudson Bay Line.

19381. May 26.—Authorizing C.N. Ontario Ry. to divert public road between Cons. 3 and 4, Scarborough Tp., and carry road under its line by subway: company to build only that portion of diversion between north boundary of its right of way and where diverted road joins the original road on the south.

19382. May 23.—Authorizing Great Northern Ry. and British Columbia Electric Ry. to operate over crossing in New Westminster without stopping.

19383. May 26.—Authorizing C.P.R. to build bridge 7.17 over Reynolds Creek, Port Burwell Subdivision, Ont.

19384. May 26.—Authorizing G.T.R. to build siding for McCormick Manufacturing Co., London, Ont.

19385. May 26.—Approving location of G.T. Pacific Branch Lines Co. stations at Argo, Wakaw, Edenwold, Fee, Zehner and Siding 7, Sask.

19386. May 26.—Approving location of C.N. Ontario Ry. station grounds at Smoky Falls, mileage 253.38 from Ottawa.

19387. May 17.—Authorizing C.P.R. to build its Forsyth St. Branch under Montreal Tramway Co.'s tracks on Lasalle and Pie XI. Sts., and to cross same on Aird St. at grade in Maisonneuve, Que.

19388. May [illegible] for approval of C.P.R. telegraph tolls in Canada west, including Sudbury, Ont., to and from points west of Sudbury, from and to points east thereof, and east of and including Windsor, Ont., and authorizing use of existing tolls in meantime.

19389. May 26.—Authorizing C.P.R. to build branch for Godson Construction Co., Darlington Tp., Ont.

19390. May [illegible].—Amending order [illegible], Feb. 25, re C.N. Ontario Ry. station grounds at various points.

19391. May 26.—Relieving Vancouver, Victoria and Eastern Ry. and Navigation Co. from erecting fences along its right of way from New Westminster to Vancouver, B.C., relief to cease when any land on either side becomes settled.

19392. May 26.—Ordering G.T.R. and C.P.R. to install improved types of automatic electric bells at crossing of Perth Road, near Kingston, Ont., and to remove mud piles.

19393. May 26.—Approving location of G.T. Pacific Ry. station at Thornton, Alta.

19394. May 17.—Authorizing Toronto Eastern Ry. to cross and divert Oshawa Creek, Oshawa, Ont., and to take portions of Lots 11 and 12, and strip of land 17 ft. wide on each side of approved location, question of value to be settled by arbitration if parties unable to agree.

19395. May 23.—Establishing collection and delivery limits of Dominion Express Co. in Gull Lake, Sask.

19396. May 26.—Ordering that G.T.R. and Campbellford, Lake Ontario and Western Ry. (C.P.R.) provide farm crossings for M. I. Way, Trenton, Ont., each company to do work on its own right of way.

19397. May 29.—Approving plans for carrying McIntyre drain under G.T.R., Southwold Tp., Ont.

19398. May 27.—Authorizing Toronto Suburban Ry. to connect with C.P.R., near Weston, Ont.

19399. May 29.—Approving location and revised location of Toronto Eastern Ry. through Pickering and Scarboro Tps.

19400. May 29.—Relieving C.N. Quebec Ry. from erecting fences along its right of way between mileage 22 and 40, Montfort Branch, until land on either side becomes settled.

19401. May 29.—Authorizing C.N. Ontario Ry. to build across highways in Stafford Tp. between Lots 30 and 31 and 31 and 32, Con. 1.

19402. May 29.—Authorizing C.N. Ontario Ry. to build across public road between Lots 32 and 28, Cons. 1 and A, Stafford and Alice Tps.

19403. May 29.—Authorizing Canadian Northern Ry. to build bridges over Shebandowan and Mattawin Rivers at mileage 55.2 and 51.1 from Port Arthur respectively to replace present structure.

19404. May 29.—Authorizing C.P.R. to build bridges 94.0 over Kettle River, Boundary Subdivision, B.C., and 1.0 over main irrigation canal, Bassano-Empress Subdivision, Alta.

19405. May 29.—Authorizing C.P.R. to build spur for Arlington Shingle Co., Nanoose District, Vancouver Island, B.C.

19406. May 29.—Authorizing C.P.R. to build spur for Ontario Stone Corporation, North Orillia Tp., Ont.

19407. May 30.—Approving change of grade in present grade crossings on C.P.R. London Subdivision, Ont., and authorizing it to build additional track across two highways at mileage 10.86 and 11.43, Etobicoke, Tp., Ont.

19408. May 27.—Approving location and revised grade, as built, of C.P.R. second track from Lot 23, Con. 3, Scarboro Tp., mileage 87.34, to Leaside Jct., Ont., at mileage 95.64 from Havelock.

19409. May 26.—Approving revised location of C.P.R. station at Stirling, Alta.

19410. May 26.—Approving location of C.P.R. station at Cloan, Sask.

19411. May 27.—Amending order [illegible], May 13, re C.P.R. connection with Ottawa and New York Ry. at Finch, Ont., by providing that service at Chesterville and Merrickville be continued.

19412. May 27.—Authorizing Esquimalt and Nanaimo Ry. to open for traffic its Cowichan Lake Branch from Hayward Jct. to Cowichan Lake, B.C., 18 miles.

19413. May 30.—Authorizing Esquimalt and Nanaimo Ry. to build bridge 5.45 near Esquimalt, Vancouver Island, B.C.

19414. May 26.—Relieving G.T. Pacific Ry. from erecting fences along portions of its right of way west of Winnipeg, relief to cease when any land on either side becomes settled.

19415. May 26.—Authorizing G.T.R. to build siding and spur for J. G. Butterworth, Ottawa, Ont., crossing of Rochester St. to be protected by watchman.

19416. May 27.—Authorizing G.T.R. to build siding connecting its District 32, Ottawa Division (Canada Atlantic Ry.), with its District 12, Northern Division, at Scotia Jct., Ont.

19417. May 27.—Approving G.T.R. plans of new station at Port Hope, Ont.

19418. May 30.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to cross and divert road at mileage 55.87 from Glen Tay, in Richmond Tp., Ont.

[illegible] Tay, Ont.

[illegible] and 15, Con. 1, Darlington Tp., Ont.

[illegible] Lake Ontario and Western Ry. (C.P.R.) to build tracks of east and west spurs to gravel pit at grade across forced road in Lots 20 and 24, and roadway between Lots 24 and 25, Con. 8, Cam- [illegible]

[illegible] Standard Freight Mileage Tariff, C.R.C. 16, to [illegible]

[illegible] tario Ry. [illegible] Tp.

[illegible] 18592, Jan. [illegible] ns at [illegible] il the [illegible]

[illegible] Great Northern Ry. [illegible] at foot of Subway Ave., White Rock, B.C., and to file within 30 days from date detail plans for [illegible]

19431. May 31.—Authorizing C.P.R. to open for traffic portion of its main line second track between Mission Jct. and Hammond, B.C., mile- [illegible]

19432. May 30.—Authorizing C.P.R. to build spur for J. Kerr, in Lot 16, Con. 10, Erin Tp., Ont.

[illegible] with Hull Electric Ry.

19434. May 29.—Authorizing C.N. Ontario to build overhead across G.T.R. near Pembroke, Ont.

[illegible] 5, 1909, re National Transcontinental Ry. crossing [illegible]

19436. May 22.—Authorizing C.P.R. to build [illegible] Ont.

19437. May 22.—Ordering C.P.R., within two [illegible] gates at Royce Ave., Toronto, leaving no opening, and fence to connect closely.

19438. May 30.—Authorizing C.P.R. to expropriate Subdivisions 170, 171 and 172 of primitive lot Cadastral 138, Montreal Parish, for team [illegible]

19439. May 31.—Approving plan showing guard rails for trestles and bridges on Kootenay and Alberta Ry.

[illegible] Coleman municipal drain under G.T.R., in Lot 25, Con. 2, Elma Tp., Ont.; G.T.R. to have option of doing work on its own right of way.

19441. May 31.—Authorizing G.T. Pacific Branch Lines Co. to build spur for L. R. Gransaull at Ferintosh, Alta.

19442. June 2.—Approving location of G.T. Pacific Branch Lines Co. station at Siding 1, mileage 5.9, Regina-Moose Jaw Branch, Sask.

19443. June 2.—Ordering that interchange tracks between G.T.R. and C.P.R. at Orillia be [illegible]

19444. June 2.—Authorizing C.P.R. to build bridge over Etobicoke River, near Summerville, Ont.

[illegible] to build additional track at Lakeside across road allowance between Cons. 12 and 13, East Nissouri Tp., [illegible]

[illegible] Bromhead ballast pit spur across highways at mileage 34.0, on its Estevan-Forward Branch, [illegible]

19448. June 2.—Authorizing C.P.R. to build [illegible]

[illegible] location of [illegible]

[illegible]

[illegible]

[illegible] avel Co., St. Ga- [illegible]

[illegible] ing location of C.P.R. [illegible]

spurs on its Lac du Bonnet Subdivision, Man.

19456. May 14.—Ordering C.P.R. to build grade crossing from Junction Ave., Gloucester [illegible]

[illegible] False Creek, Vancouver, B.C., and for City of [illegible]

19459. May 19.—Authorizing Vancouver, Victoria and Eastern Ry. and Navigation Co. to divert portions of George and Burns Sts., Van- [illegible]

19460. May 19.—Authorizing C.P.R. to build spur for Call Switch Co., Port Coquitlam, B.C.

19461. June 4.—Authorizing G.T. Pacific Ry. to build bridge across Mud River, mileage 452, Prince Rupert East, B.C.

19462. June 4.—Approving revised location of C.N. Ontario Ry. from Lot 338, Con. 1, Chatham Tp., to Lot 10, Con. 1, Grenville Tp.

19463. June 4.—Authorizing C.P.R. to build bridge 12.7 over Sixteen Mile Creek, near Milton, Ont.

19464. June 2.—Authorizing C.P.R. to use bridges 54.0, 24.5, 35.7 and 54.7, Macleod Subdivision, Alta.

19465. June 4.—Authorizing C.P.R. to open for traffic its Kerrobert Northeasterly Branch from mileage 0 to 36.1, and limiting speed of trains to 20 miles an hour, for 25 miles, and to 15 miles an hour for the remainder.

19466. June 4.—Authorizing C.P.R. to build second track across 8 highways, mileage 25.04 to 31.02, London Subdivision, Ont., and approving change in grade of existing crossings.

19467. June 5.—Extending to Dec. 1, time in which Bell Telephone Co. may charge existing telephone tolls.

19468. June 4.—Amending order 19304, May 12, re crossing of Brantford St. Ry. by Lake [illegible] Ry.

19469. June 4.—Authorizing Canadian Northern Ry. to build across and divert public road between Secs. 24-13 and 23-14-2-8, w. 2 m., Sask.

19470. June 5.—Approving location of C.P.R. station at Biggar, Sask.

19471, 19472. June 5, 4.—Authorizing C.P.R. to build spur for Canada Wire and Cable Co. at Leaside Jct., Ont., on condition that connection be removed when C.N. Ontario Ry. is in operation; and spur for Alberta Stock Yards Co., Calgary, Alta.

19473. June 5.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to build at grade across highway at mileage 124.07 from Glen Tay; question of protection reserved until [illegible]

[illegible] Hamilton and Buffalo Ry. to cross with its double track [illegible]

19475. June 5.—Amending order 19321, May [illegible] Ry., near Paris, Ont., by Lake Erie and Northern Ry.

19476. June 6.—Approving Canadian Northern Ry. location through Tps. 25-26, r. 20-23, w. 3 m., Sask., mileage 85.24 to 105.42.

19477. June 6.—Approving location of C.N. Branch Lines Co. through Tps. 2-3, r. 21-23, [illegible] Man., mileage [illegible]

19478. June 2.—Authorizing C.P.R. to build additional track across 21 highways, mileage 10.86 to 31.02, London Subdivision, Ont., and approving change of grade of existing crossings.

19479. May 27.—Ordering Canadian Northern Ry. to divert east and west road allowance from mileage 150.3 to north and joining road allowance at mileage 150.6, and also divert to north road allowance at mileage 151.3 and join north and south road allowance at mileage 151.4; diverted portion to be made 66 ft. wide, company to do grading and acquire property for diversion and convey same to Chester Rural Municipality, 125.

19480. June 2.—Authorizing Welland County Telephone Co. to erect wires across G.T.R. and M.C.R. in Bertie and Willoughby Tps., Ont.

19481. June 2.—Ordering that C.N. Ontario Ry. and G.T.R. be connected at Belleville, so as to provide for handling and interswitching traffic. C.N.O.R. to file, within 15 days, plans showing proposed connection and interchange tracks, on south side of Wharf St., from its tracks to Canada Steel Co., and connecting with G.T.R. leading to same plant near George St.; apportionment of the cost reserved.

19482. June 6.—Ordering C.P.R. to build spur from ½ mile west of Brocket Bridge to Crowsnest Stone Co., Lethbridge, Alta.

19483. June 6.—Authorizing C.P.R. to build bridge over South Saskatchewan River, on its Swift Current Northwesterly Branch, Sask., on condition that it provide a draw span in bridge, [illegible]

19484. June 6. Approving location Toronto [illegible]

[illegible]

[illegible] Alta.

[illegible]

siding for Ontario Government on Lot 6, Con. 1, [illegible]

19488. June 6.—Authorizing Toronto, Hamilton and Buffalo Ry. to build spur in Hamilton, Ont., from west of Trolley St., on its Westinghouse Branch, easterly across Trolley St., to Avondale St.

19489. June 7.—Authorizing C.P.R. to open for traffic its double track from Belle Plain to Regina Yard, mileage 109.6 to 92.0, Moose Jaw Subdivision.

19490. May 19.—Approving Vancouver, Victoria and Eastern Ry. and Navigation Co.'s plans of times and method of building bridges over certain streets in Vancouver, B.C., detail plans [illegible] Board's Engineers.

19491. June 6.—Authorizing City of Lethbridge, Alta., to build highway across C.P.R. by extending Twenty First St. South to First Ave. North.

19492. June 7.—Authorizing G.T. Pacific Ry. to carry traffic on its Lake Superior Branch between Superior and Fort William, Ont., mileage 0 to 189.9, and rescinding orders 5918 and 5992, Dec. 22, 1908, and Jan. 2, 1909, respectively, in same connection.

19493. June 6.—Authorizing C.P.R. to build additional track across Rue Plinguet, St. Boniface, Man.

19494, 19495. June 6.—Authorizing City of Regina, Sask., to build its municipal railway across C.P.R. spur at intersection of Winnipeg St. and Eighth Ave., and on North Railway St., or Dewdney Ave., at grade.

19496. May 30.—Authorizing Canadian Northern Ry. to remove spur serving lots owned by W. A. Taylor, St. John Parish.

19497. May 15.—Dismissing application of Kelowna Board of Trade, B.C., for order directing C.P.R. to discontinue charge of $1 made on all incoming and outgoing cars delivered from and taken to its car barges.

19498. June 6.—Ordering G.T. Pacific Ry. to provide cattle pass under its line, and two farm crossings for F. W. Green, Moose Jaw, Sask.

19499. June 5.—Authorizing Esquimalt and Nanaimo Ry. to build bridge over Tsable River on its Comox Extension, B.C.

19500. May 29.—Ordering C.P.R. to move to west of Government road allowance all its tracks on south side of main line at Herbert, Sask., passing track switch to be located not closer than 500 ft. from west side of allowance; no cars to be left standing closer than 450 ft. from said road on commercial or elevator tracks, or 500 ft. on mill or spur track, etc., and rescinding order 18613, Feb. 1.

19501. June 7.—Authorizing C.P.R. to build spurs for Builders' Supply Co., Winnipeg.

19502. June 6.—Authorizing City of Regina, Sask., to build its municipal railway across C.P.R. spur at grade on Dewdney Ave., immediately west of Broad St.

19503. June 5.—Authorizing C.N. Ontario Ry. to build undercrossings on farms of J. J. Stinson and R. Moore, Nepean Tp.

19504, 19505. May 14, 12.—Authorizing Lake Erie and Northern Ry. to build under G.T.R. between Paris and St. George, at station 538+16.9, and to build across 6 highways in South Dumfries Tp., Ont.

19506 to 19510. June 7, 6.—Authorizing City of Regina, Sask., to build its municipal railway across Canadian Northern Ry. on Fourth Ave., [illegible] Sts., across G.T.P. Branch Lines Co. at intersection of Elphinstone St., immediately north of Sixteenth Ave., to G.T.P. station; across C.N.R. on Albert St., between Chicago and Washington Aves.; across G.T.P. Branch Lines Co., at Fifth Ave., between Ross and Parliament Sts.; and at Thirteenth Ave., between Ross and Allan Sts.

19511. June 6.—Authorizing Canadian Northern Ry. to build across and divert public road between Secs. 12 and 13, Tp. 6, r. 18, w. 2 m., Sask.; and to close portion of road allowance diverted within its right of way.

19512. June 9.—Establishing collection and delivery limits of Dominion Ex. Co. in Kelowna, B.C.; and rescinding order 16514, May 14, 1912.

19513. June 7.—Ordering Esquimalt and Nanaimo Ry. to build steel span girder bridge, with 14 ft. clearance and 40 ft. between abutments, over Hereward Rd., Victoria, B.C.; work to be done within 6 months from date, city to regrade highway; cost of bridge to be paid, 20% out of the railway grade crossing fund, 1-3 of remainder [illegible]

19514. June 9.—Ordering G.T.R. to operate trains over crossing of Queen St., Mount Forest, Ont., at a speed not exceeding 10 miles an hour; all switching movements on siding to be flagged over crossing.

19515. June 9.—Dismissing application City of Calgary, Alta., for extension of express delivery limits as authorized under order 15149, Sept. 8, 1911.

19516. June 7.—Approving Quebec, Montreal and Southern Ry. plans showing piers of St. Francois River bridge, between St. Francois du Lac and Pierreville, Que.

19517. June 9.—Authorizing Toronto Suburban Ry. to connect with C.P.R. at Cooksville, Ont.

19518, 19519. June 9.—Authorizing C.N. Ontario Ry. to build across public road between [illegible] public road on Lot 11, Con. 1, Pembroke Tp., and to build across same by a bridge.

19520. June 9.—Authorizing form of bond to be given the New Toronto Municipality by G.T.R. in connection with laying additional 6 in. water main 4 ft. below surface for conveying water from Lake Ontario to G.T.R. terminals, across Lake Shore Road, under Toronto and York Radial Ry. along 7th St., and across New Toronto St., as authorized by order 18,9[illegible], Feb. 6.

19521, 19522. June 9.—Authorizing C.P.R. to operate bridges 0.55 to Sortin, Smiths Falls Subdivision; 1.85, Montreal Terminals, Westmount, Que.; 140.5 and 96.6, Calgary Subdivision, Alta.

19523. June 7.—Authorizing C.P.R. to build extension to siding across road diversion in Lot 21, Con. 13, Medonte Tp., mileage 74.87, at grade.

19524, 19525. June 9.—Authorizing C.P.R. to build spurs for Regina Trading Co. and Rumely Products Co. Inc., Regina, Sask.

19526. June 9.—Authorizing Esquimalt and Nanaimo Ry. to build bridge over Rosewell Creek, Comox extension, B.C.

19527. June 9.—Amending order 19319, May 15, re crossing of Canadian Northern Ry. by municipal electric railway at Fort William, Ont.

19528. June 9.—Ordering G.T.R. to install improved type of illuminated electric bell at crossing at Fort Erie and Port Colborne Road, east of Sherkston Station; 20% to be paid out of railway grade crossing fund.

19529. June 9.—Ordering that cost of subway under C.P.R. at Hunter and Bexley Sts., Woodstock, Ont., authorized by order 16086, July 8, 1912, be paid, 20% out of the railway grade crossing fund and the remainder by C.P.R.

19530 to 19534. June 9.—Establishing express collection and delivery limits in London Ont.; Taber, Alta.; Sault Ste. Marie, portion of Steelton, Ont.; Windsor, Ont.; and Walkerville, Ont., and rescinding order 15300, Oct. 24, 1911.

19535. June 4.—Authorizing G.T.R. to build sidings and tracks, or yard extensions for Canadian Furnace Co., Port Colborne, Ont.

19536. June 10.—Ordering C.P.R. to operate two first class trains, each way, per day, on week days, between Ottawa and Prescott: time of run to be not more than 2 hours; effective July 1; and restraining company from hauling freight cars on said trains.

19537, 19538. June 9.—Establishing express collection and delivery limits in St. Thomas and Haileybury, Ont.

19539. June 9.—Extending eastern and southern limits of area within which railway companies undertake cartage of freight in London, Ont.

19540. June 10.—Dismissing application of Dominion Townlots, Ltd., for authority to build a highway across C.P.R. at Broadway, Sask.

19541. June 10.—Authorizing Esquimalt and Nanaimo Ry. to divert Comox wagon road to connect with public road crossing its line at mileage 13.0, Comox Extension, B.C.; and rescinding order 9843, Mar. 10, 1910.

19542. June 10.—Authorizing G.T.R. to rebuild bridge 134 at mileage 222.32, District 2, over St. Francis River, near Richmond, Que.

19543. June 10.—Authorizing C.P.R. to build bridge 10.8 over South Spitler Creek, near Ostrander Station, Ont.

19544. June 10.—Ordering Canadian Northern Ry. to build culvert under its tracks on Winchester Ave., Fort Garry, Man.

19545. June 10.—Ordering Canadian Northern Ry. and C.P.R. to deepen culverts by 3 ft., and ditches across their rights of way, except portion of C.P.R. right of way which provides roadway to station buildings at Maryfield, Sask., where culvert is to be lowered 1 ft.; ditch to and from right of way to be lowered by Maryfield Village, work to be completed by Aug. 15.

19546. June 10.—Authorizing Hamilton St. Ry. to build two tracks at grade across Toronto, Hamilton and Buffalo Ry. at intersection of Main and Trolley Sts., Hamilton, Ont.

19547. June 10.—Authorizing C.N. Ontario Ry. to build overhead across public road between Pembroke and Stafford Tps.

19548. June 10.—Authorizing Canadian Northern Ry. to build across 6 highways in Saskatchewan.

19549. June 10.—Extending to June 30, time within which G.T.R. shall install bell at crossing, 150 ft. west of St. Hilaire Station, Que.

19550. June 7.—Authorizing G.T.R. to build siding for J. B. Mustard, Stanley Tp., Ont.

19551. June 10.—Authorizing C.P.R. to cross, temporarily, with its Bergen North Easterly cutoff, Canadian Northern Ry. Oak Point Branch; crossing to be protected by watchman paid by C.P.R.

19552. June 10.—Authorizing C.P.R. to build spur for R. MacFarlane and Co., Montreal.

19553. June 12.—Dismissing application of H. Simpson and others, Niverville, Man., for order directing C.P.R. to stop express trains there.

19554. June 10.—Ordering Canadian Northern Ry. to place station agent at D'Arcy, Sask., by Aug. 1.

19555. June 11.—Ordering that Canadian Northern Ry. crossings at Central Ave. and First Ave. East, Prince Albert, Sask., be protected by watchmen between 7 a.m. and 6 p.m. daily, except Sunday; to be paid, 2-3 by C.N.R., 1-3 by city; payment be made monthly or quarterly as parties may agree; any dispute to be settled by the Board.

19556. June 10.—Authorizing C.P.R. to build diversion of roadway in Lot 6616, Kootenay District, B.C., mileage 46.7 from Colvalli, and to cross diversion at grade.

19557, 19558. June 11.—Authorizing C.P.R. to build road diversion at mileage 38.44 from Swift Current, Sask., on its Swift Current Northwesterly Branch; and cross same at grade, and to divert and cross by a bridge, road allowance in Sec. 26-19-19, w. 3 m., on same branch.

General Order 105. May 22.—Amending Regulations for Transportation of Explosives by Railway Companies, operating in Canada, to provide that companies, subject to Board's jurisdiction, but only on such lines, or portions of lines, on which solid freight trains are not operated, be permitted to carry explosives, the carriage of which is not forbidden by General Order 100, and in accordance with regulations therein contained, in quantities not exceeding 500 lbs., in any mixed train; explosives to be contained in but one car, car to be so placed in train that not less than 5 freight cars are between it and the passenger coach, or coaches.

Birthdays of Transportation Men in July.

Many happy returns of the day to:

J. H. Black, ex-Superintendent, Timiskaming and Northern Ontario Ry.; now at Cobalt, Ont., born near Smiths Falls, Ont., July 8, 1874.

M. S. Blaiklock, Engineer Maintenance of Way, G.T.R., Montreal, born at Quebec, July 19, 1859.

D. E. Blair, Superintendent of Rolling Stock, Montreal Tramways Co., born at St. Thomas de Montmagny, Que., July 25, 1877.

H. F. Bradley, Passenger Manager, Allan Line Steamship Co., Montreal, born at Waterville, Que., July 20, 1876.

D. C. Coleman, General Superintendent, Manitoba Division, C.P.R., Winnipeg, born at Carleton Place, Ont., July 9, 1879.

Geo. Collins, General Manager, Central Ontario Ry., Trenton, Ont., born at Kingston, Ont., July 20, 1860.

G. C. Conn, Vice President, Pere Marquette Rd., Detroit, Mich., born at Woburn, Mass., July 1, 1867.

D. D'E. Cooper, Canadian Freight Agent, Lehigh Valley Rd., Toronto, born at Buffalo, N.Y., July 8, 1862.

John Corbett, ex-General Foreign Freight Agent, C.P.R., Montreal, born in Lanarkshire, Scotland, July 19, 1863.

S. E. Dewey, Commercial Agent, G.T.R., Pittsburgh, Pa., born at Beckenham, Kent, Eng., July 4, 1879.

F. C. Foy, Canadian Passenger Agent, New York Central Lines, Toronto, born there, July 5, 1881.

J. B. Gray, Superintendent, Sleeping, Dining and Parlor Cars and News Service, Eastern Lines, C.P.R., Montreal, born July, 1876.

J. H. Hanna, ex-Division Freight Agent, G.T.R., at Hamilton, Ont., now at Calgary, Alta., born at London, Ont., July 27, 1867.

A. D. Huff, ex Division Freight Agent, G.T.R., Ottawa, now Traffic Manager, Laurentide Co., Montreal, born at Chatham, Ont., July 17, 1866.

C. A. Jaques, ex Steamship Owner, Montreal, born there July 15, 1849.

J. P. Kavanagh, Local Manager, Ogdensburg Coal and Towing Co., Montreal, born at Plattsburg, N.Y., July 17, 1862.

R. G. McNeillie, District Passenger Agent, C.P.R., Calgary, Alta., born at Lindsay, Ont., July 1, 1883.

J. M. Macrae, District Freight Agent, Canadian Northern Ry., Saskatoon, Sask., born at Stornoway, Scotland, July 31, 1884.

T. J. Maguire, Accountant, Quebec Central Ry., Sherbrooke, Que., born at Quebec, July 31, 1860.

E. L. Pease, Assistant General Freight Agent and Chief of Tariff Bureau, Intercolonial Ry., Moncton, born at [illegible], Ont., July 5, 1876.

E. Preston, Master Mechanic, Manitoba Division, C.P.R., Winnipeg, born at Toronto, July 28, 1863.

J. L. Quinn, General Baggage Agent, G.T.R. and G.T.P.R., Toronto, born at Richmond, Ontario Co., N.Y., July 10, 1851.

G. G. Ruel, Chief Solicitor, Canadian Northern Ry., Toronto, born at St. John, N.B., July 5, 1866.

P. E. Ryan, Secretary, National Transcontinental Railway Commission, Ottawa, born there July 26, 1876.

Geo. Stephen, General Freight Agent, Canadian Northern Ry., Winnipeg, born at Montreal, July 5, 1870.

G. A. Stokes, Terminal Superintendent, G.T.R., Toronto, born in Nassagawaya Tp., Ont., July 23, 1879.

R. F. Struthers, Chief Inspector of Time Service, C.P.R., Winnipeg, born at Stratford, Ont., July 31, 1879.

Sir Thos. Tait, President, Fredericton and Grand Lake Ry. and Coal Co., born at Melbourne, Que., July 24, 1864.

H. T. Wilgress, Agent, C.P.R. Pacific Steamship Service, Yokohama, Japan, born at Lachine, Quebec, July 29, 1857.

Prince Edward Island Car Ferry Terminals.

We are officially advised that contracts for the construction of terminals for the Prince Edward Island car ferry service have been awarded as follows:—At Cape Tormentine, N.B., to A. T. Mackie, Toronto; at Carleton Point, P.E.I., to Halifax Dredging Co., Halifax, N.S.

The work to be done at Carleton Point includes the construction of a car ferry landing slip; a pier protection to the same; a rubble mound breakwater; a rubble mound approach to the landing pier; the dredging of berths or trenches for cribs of pier to 20 ft. below low water mark; the filling of cribs, etc.; the excavation to 25 ft. below low water of all the area between the car ferry landing and breakwater, and between the 600 ft. entrance and certain other points shown on plans. The landing slip is to consist of 335 ft. of double row fender work, and the protection work of nine cribs. These will include reinforced concrete and stone work, with timber facings, etc.

The work at Cape Tormentine is of a similar character, except that the landing slip is to consist of 330 ft. of double row pile fender work; and the protection work is to cinsist of 12 timber cribs of close faced crib work. The present pier is to be widened by the construction of widening cribs. The work at both places is to be completed by Dec. 31, 1914.

The Quebec Transportation Club's annual meeting was held at Kent House, Montmorency Falls, June 3, when the following officers were elected for the current year:—Hon. President, H. G. Matthews, General Manager, Quebec Ry., Light, Heat and Power Co.; Hon. Vice President, E. O. Grundy, General Freight and Passenger Agent, Quebec Central Ry.; Hon. Second Vice President, W. M. Macpherson; President, J. S. Thom, Manager, Quebec Transportation Co.; First Vice President, M. P. Connolly, General Agent, Richelieu and Ontario Navigation Co.; Second Vice President, G. J. P. Moore, City Passenger Agent, C.P.R.; Hon. Secretary-Treasurer, J. S. Blanchet; Committee—W. Langford, W. J. Thompson, J. T. Cassels, A. T. Dion and J. A. Everell.

Mainly About Transportation People.

LADY MANN and her son have returned to Toronto, after spending the winter in Europe.

GRANT HALL, General Manager, Western Lines, C.P.R., Winnipeg, is reported to be seriously ill.

C. E. E. USSHER, Passenger Traffic Manager, C.P.R., and his wife and family are visiting California.

SIR WILLIAM WHYTE [illegible] June 20.

J. U. GREGORY, for many years agent of the Dominion Marine Department at Quebec, died there, May 30, aged 83.

H. CLARKE, Storekeeper, G.T.R., Montreal, retired on superannuation, May 31, and is now residing at Cobourg, Ont.

G. McL. BROWN, European Manager, C.P.R., has been installed as Master of Canada Lodge, A.F. & A.M., in London, Eng.

ANGUS MACMURCHY, K.C., local solicitor, Canadian Pacific Ry., Toronto, and Mrs. MacMurchy, have gone to England.

R. W. SHEPHERD, of the Ottawa River Navigation Co., who died suddenly in Montreal some few months ago, left an estate of [illegible].

Mrs. Walker, wife of J. J. WALKER, Chief Accountant, Intercolonial Ry., Moncton, N.B., died at Pointe du Chene, N.B., June 6.

J. E. MUHLFELD, formerly Superintendent of Motive Power, Intercolonial Ry., is now located in New York, engaged in special and consulting work.

T. W. LOWE, General Boiler Inspector, Western Lines, C.P.R., Winnipeg, has been elected President, Master Boiler Makers' Association, for the current year.

A. DENNY, of Denny and Sons, Shipbuilders, Greenock, Scotland, who has been made a Baronet, was formerly a director of the Dominion Atlantic Ry.

P. DOYLE, of the G.T.R. Bridge and Building Department, Montreal, was presented with a purse of gold by the staff, Jan. 22, on the occasion of his marriage.

G. CHAPMAN, for 30 years G.T.R. station agent at Courtland, Ont., was found dead in bed at St. Thomas, May 28. He retired from active service a few years ago.

W. W. ASHALD, Superintendent of Telegraphs, G.T.R., died suddenly of heart failure, at his home, Montreal, a few hours after he returned from his office, June 17, aged 57.

F. E. SKINNER, Auditor of C.P.R. Stores and Mechanical Accounts, Winnipeg, was presented with a cabinet of silver by the staff, June 20, on the occasion of his marriage.

LADY AND THE MISSES SHAUGHnessy left Montreal, June 22, for their summer home, Fort Tipperary, St. Andrews, N.B., where Mrs. Beauclerk will join them later.

[illegible] Mass., June 9, was at one time in the In[illegible] Superintendents.

ROBERT HOBSON, Vice President and General Manager, Steel Company of Canada, and Mrs. Hobson, left Hamilton, Ont., [illegible]

[illegible] from England and will spend the summer on the Pacific Coast.

R. W. LEONARD, Commissioner, National Transcontinental Ry., has offered to erect a tower and supply a peal of bells for Grace Church, Brantford, Ont., with which he was formerly connected.

E. H. HILEY, heretofore Divisional Goods Manager, North Eastern Ry., of England, has been appointed General Manager of the New Zealand State Railways, comprising about 2,800 miles of line.

Mrs. Stitt, wife of W. STITT, General Passenger Agent, C.P.R., Eastern Lines, Montreal, accompanied by Miss M. Macfarlane, visited friends in Winnipeg, June 2, on her way to Vancouver, and Australia.

SIR W. M. AIKEN, M.P., who is interested in the company to which a franchise has been granted for the building of an electric railway in Medicine Hat, Alta., arrived in Montreal, from London, Eng., June 9.

FRANCIS KING, Counsel, Dominion Marine Association, Kingston, Ont., has gone to England in connection with a case before the Imperial Privy Council and is expected to return about the middle of August.

A. T. Tomlinson, M. Can. Soc. C.E.,
[illegible]

J. W. TROUP, Manager, British Columbia Coast Service, C.P.R., returned to Canada, [illegible] Great Britain, where he had been in connection with the placing of orders for the construction of two vessels for the service.

A. J. TAYLOR, Canadian Freight and Passenger Agent, Chicago, Milwaukee and St. Paul Ry., Toronto, who recently underwent an operation [illegible] and is expected to return to business during July.

J. A. ROSS, C.P.R. city ticket agent and agent Dominion Express Co., was presented with a silver mounted umbrella by the company's staff at St. Thomas, Ont., on [illegible] position at Chatham, Ont., June 16.

F. H. PHIPPEN, General Counsel, Canadian Northern Ry., and Mrs. Phippen, are staying at the King Edward Hotel, Toronto, for part of the summer, but later will go to their new house on Etobicoke River, near the new Toronto Golf Club.

Mrs. Kelly, Winthrop, Mass., who was killed in an accident on the New York, New Haven and Hartford Rd., at Stamford, Conn., June 12, was the wife of E. J. KELLY, who is spoken of in press dispatches as local land agent, C.P.R.

WM. WAINWRIGHT, Vice President, G.T.R. and G.T.P.R., has gone to England. Miss Marguerite Wainwright is going to Cushing's Island, Me. Miss Gladys Wainwright will spend the summer at Tadousac, Que., with her sister, Mrs. A. R. Chipman.

W. F. TYE, M. Can. Soc. C.E., left Toronto early in June for Europe, intending to return to Canada in the autumn and to then again take up his residence in Montreal. He has resigned the presidency of Sterling Coal Co., Ltd., of which, however, he remains a director.

MISS W. SAUNDERS, who has retired from the Secretary-Treasurership of the St. Thomas, Ont., St. Ry., was presented with a silver tea set and tray by the city hall officials, and with a drawing room clock by the street railway employes, June 22.

W. E. DUPEROW, General Agent, Passenger Department, Grand Trunk Pacific Ry., Vancouver, B.C., has been appointed chairman for the meeting of the North Pacific Coast Terminal Line Passenger Agents' Association, which will be held at Vancouver, Aug. 5.

C. H. MASSIAH, whose appointment as Paymaster, G.T.R., Montreal, was announced in our last issue, was born at Quebec, Que., May 1, 1883, and entered G.T.R. service Nov. 19, 1904, since when he has been, to Apr. 1, 1913, in the Treasurer's office at Montreal.

J. E. QUICK, General Baggage Agent, G.T.R., and G.T. Pacific Ry., Toronto, was elected Secretary and Treasurer of the American Association of General Baggage Agents, for the thirtieth successive year, at the recent annual convention at Colorado Springs.

FRANK A. FLEMING, eldest son of Sir Sandford Fleming, Hon. M. Can. Soc. C.E., died in Toronto, June 4, aged 58. He accompanied his father in a trip over the then projected route of the C.P.R. from Winnipeg to the Pacific Coast in the early seventies.

This is how the Toronto Globe referred recently to F. H. PHIPPEN, General Counsel, Canadian Northern Ry.:—"Hon. F. H. Phippen, an ex-judge of the United States, and chief counsel of the Canadian Northern, was the first witness for the defence."—"An ex-judge of the United States" is a gem.

Mrs. Reynolds, wife of M. M. REYNOLDS, Vice President, G.T.R. and G.T. Pacific Ry., died at Rochester, Minn., June 1, after an illness, which though lasting for some time, was not considered serious. Mr. Reynolds was on the way to take her back to Montreal when the news reached him. She was buried at St. Albans, Vt.

A. S. SWAN, on recently leaving Montreal, where he had been Assistant Engineer to the Harbor Commission, was the guest at a dinner given by the staff, and the recipient of a number of gifts. He left Montreal, for Valparaiso, Chile, June 6, where he will be engaged in dock construction work for the British firm of which Sir John Jackson is head.

J. J. HOWARD, for a number of years foreman with the James McDiarmid Co., Winnipeg, was presented with a purse of money on leaving the firm's employ, to become Managing Director of the Fort Garry Construction Co. The James McDiarmid Co. has been engaged for some years in carrying out contracts for station and other buildings on the C.P.R. west of Winnipeg.

EINER L. LANDORPH, who has been appointed Resident Engineer, C.P.R., Brandon, Man., was born at Copenhagen, Denmark, Sept. 9, 1888, and graduated as a civil engineer from the University of Copenhagen, Jan., 1911. He entered C.P.R. service, June 24, 1912, since when he has been, to Nov. 6, 1912, draughtsman, Winnipeg; Nov. 7, 1912, to Apr. 30, 1913, transitman at Brandon, Man.

A. S. MUNRO, whose appointment as Commercial Agent, G.T.R., London, Ont., was announced in our last issue, was born at Hamilton, Ont., Nov. 10, 1880, and entered G.T.R. service, Jan. 1, 1900, since when he has been, to Aug., 1905, yard and billing clerk, and secretary to General Agent, Hamilton; Apr., 1906, to May, 1913, Travelling Freight Agent, Middle and Southern Divisions, London, Ont.

H. W. WALKER, for many years General Auditor, G.T.R., Montreal, died in Winnipeg, June 10, aged 75. He entered the G. Western Ry. service in 1854; four years later he went with the Detroit and Milwaukee Ry., going to the G.T.R. in 1862, as chief bookkeeper. His subsequent appointments were: accountant, 1878; chief accountant, 1893; general auditor, 1896. He retired from the service Jan. 1, 1907.

J. HARVIE, who was conductor of the first train which operated on the old Northern Ry. out of Toronto in 1853, and was afterwards Traffic Superintendent, and W. Downie, General Superintendent, C.P.R., St. John, N.B., met recently at Vancouver, B.C., where both have been spending a holiday with their wives. Mr. Harvie is 81 years of age, and Mr. Downie received the first twelve years of his training under him.

JAS. BALKWILL, who has been appointed Assistant Trainmaster, M.C. Rd., St. Thomas, Ont., was born in Southwold Tp., Ont., Mar. 8, 1870, and entered M.C.R. service, Mar. 18, 1888, since when he has been, to Aug. 1, 1900, relief operator and agent at various points; Aug. 1, 1900, to Dec. 1, 1903, agent at Dutton, Ont.; Dec. 1, 1903, to Mar. 8, 1904, dispatcher, St. Thomas, Ont.; Mar. 8, 1904, to June 1, 1913, chief clerk to Division Superintendent, St. Thomas, Ont.

W. MACKLAIER, who has been appointed Chief Inspector of Weighing and Refrigeration, Eastern Lines, C.P.R., Montreal, entered C.P.R. service in 1896, as clerk in the Car Accountant's office, and was transferred to Vancouver, B.C., as chief clerk, in 1903, returning east as car tracer on foreign roads, and was subsequently appointed chief clerk, Car Service Department, which position he held to May 15, 1913, the date of his present appointment.

R. A. BECKER, whose appointment as Supervisor of Signals, Eastern Lines, G.T.R., Montreal, was announced in our last issue, was born at Washington, D.C., and entered railway service in 1892 with the Signal Contracting Co., and has since been constantly engaged on signal and construction work on various railways in the eastern U.S., and for the past four years was Assistant and Construction Engineer, Signal Engineering Department, New York Central Ry.

J. PATERSON, who died at Winnipeg, June 5, aged 84, had been a resident of Manitoba since 1879. He went west to look after the water supply on what is now the C.P.R., and remained with that company in the same capacity when it took over the lines from the Dominion Government. On leaving the C.P.R. service he was appointed caretaker of the Parliament buildings at Winnipeg, from which position he retired some years ago, after over 20 years service.

R. F. McNAUGHTON, who was recently appointed Travelling Passenger Agent, Canadian Northern Ry., Saskatoon, Sask., was born at Petrolea, Ont., June 23, 1889, and entered railway service, Oct., 1908, since when he has been, to Oct., 1910, telegraph operator and ticket agent, G.T.R., at various points; Oct., 1910, to Dec., 1911, assistant rate clerk, Canadian Northern Ry., Winnipeg; Jan. to Nov., 1912, ticket stock clerk, same road, Winnipeg; Nov., 1912, to Mar. 31, 1913, chief clerk District Passenger Agent's office, same road, Saskatoon, Sask.

HENRY CLARKE, Storekeeper, G.T.R., Montreal, who retired under the provisions of the pension rules, May 31, was born at Sunningwell, Berks, Eng., Aug. 8, 1843, and entered G.T.R. service, Jan., 1872, since when he has been, to Mar. 28, 1872, brakeman, Montreal; Mar. 28, 1872, to Sept. 14, 1880, shipper, Montreal; he left the service, Sept. 14, 1880, on account of ill health, and returned, July 4, 1882, since when he has been, to May 31, 1884, storeman; June 1, 1884, to July 31, 1896, chief storeman, and Aug. 31, 1896, to May 31, 1913, Storekeeper, at Montreal.

W. McLeod,
Assistant Chief of the Department of Investigation, Western Lines, Canadian Pacific Railway.

JOHN S. PLAYFAIR, who died at Toronto, June 2, aged 87, was born at Glasgow, Scotland. He was one of the founders of the Muskoka Navigation Co., of which he was President for several years. One of his sons, Jas. Playfair, Vice President and Managing Director, Richelieu and Ontario Navigation Co., who was a passenger on the company's s.s. Hamonic, bound for Port Arthur, for the launching of the s.s. Noronic, was recalled by wireless telegraph, transferring from the Hamonic to one of the R. & O.N. Co. freighters, in mid lake, about 80 miles from Sault Ste. Marie, and arriving in Toronto by special train.

JOHN ARCHIBALD, whose appointment as Locomotive Foreman, C.P.R., Coquitlam, B.C., was announced in our last issue, was born at Edinburgh, Scotland, Mar. 13, 1872, and entered railway service in 1889, since when he has been, to 1894, apprentice [illegible], C.P.R., Winnipeg; 1894 to 1899, [illegible], Manitoba and North Western Ry., Portage la Prairie, Man.; 1899 to 1900, [illegible], C.P.R., Medicine Hat, Alta.; 1900 to 1906, leading hand, C.P.R., Calgary, Alta.; 1906 to 1907, Locomotive Foreman, C.P.R., Medicine Hat, Alta.; 1907 to 1908, Locomotive Foreman, C.P.R., Field, B.C.; 1908 to May, 1913, Shop Foreman, C.P.R., Vancouver, B.C.

H. H. SMITH, whose appointment as Car Service Agent, Canadian Northern Quebec Ry., Montreal, was announced in our last issue, was born at Quebec, Que., June 14, 1872, and entered railway service Oct. 14, 1890, since when he has been, to 1891, stenographer, Lower Laurentian Ry., Quebec; 1891 to 1895, accountant, same road, Quebec; 1895 to 1908, secretary to General Manager, Quebec and Lake St. John Ry., and Great Northern Ry. of Canada, Quebec; 1909 to May, 1913, chief clerk to General Manager, C.N.Q.R., Q. & L. St. J. R., Halifax and South Western Ry., and Inverness Ry. and Coal Co., Quebec, and since 1911 at Montreal.

H. N. MERRIAM, who was recently appointed Division Engineer, Pacific Great Eastern Ry., Lillooet, B.C., was born at Waupun, Wis., June 19, 1874, and entered railway service in June, 1898, since when he has been, to Aug., 1899, rodman, C.P.R., in British Columbia; Aug., 1899, to May, 1900, topographer, Great Northern Ry., in Montana and Washington; May to Dec., 1900, draughtsman, C.P.R.; Mar., 1901, to Mar., 1902, instrument man, Chicago Division, Chicago and North Western Ry.; Mar., 1902, to Mar., 1906, Resident Engineer on Construction, Western Lines, C.P.R.; Mar., 1906, to Apr., 1913, Assistant Engineer on Construction, Western Lines, C.P.R., his work covering different branches, including the building the spiral tunnel at Field, B.C., and double track work.

C. B. FOSTER, who has been appointed Assistant Passenger Traffic Manager, Eastern Lines, C.P.R., Montreal, and whose portrait appears in this issue, was born at Kingston, N.B., Sept. 30, 1871, and entered C.P.R. service in Apr., 1891, since when he has been, to Oct., 1892, stenographer in Passenger Department, St. John, N.B.; Oct., 1892, to Sept., 1893, senior clerk, Passenger Department, St. John, N.B.; Sept., 1893, to July, 1899, Travelling Passenger Agent, St. John, N.B.; July, 1899, to Feb. 8, 1902, chief clerk, Passenger Department, St. John, N.B.; Feb. 8, 1902, to Nov. 22, 1904, District Passenger Agent, St. John, N.B.; Nov. 22, 1904, to Sept. 8, 1908, District Passenger Agent, Toronto; Sept. 8, 1908, to Oct. 31, 1910, Assistant General Passenger Agent, Vancouver, B.C.; Oct. 31, 1910, to June 17, 1913, General Passenger Agent, Western Lines, Revelstoke, B.C., and east, Winnipeg.

FRANK E. WARD, who died at Chicago, Ill., June 6, was born July 29, 1867, and was educated at McGill Model School, Montreal. He entered railway service, Sept., 1881, and was, to Nov., 1885, apprentice clerk and stenographer in the Mechanical Department, G.T.R., Montreal; Jan., 1886, to Dec., 1887, secretary to Second Vice President, St. Paul, Minneapolis and Manitoba Ry., St. Paul, Minn.; Jan., 1888, to Nov., 1890, secretary and chief clerk to President and General Manager, Eastern Ry. of Minnesota; Jan., 1891, to July, 1894, secretary to President, Great Northern Ry.; July, 1894, to Feb., 1898, Assistant to President, same road; Mar. to Oct., 1898, General Superintendent, Montana Central Ry.; Nov., 1898, to 1903, General Superintendent, Great Northern Ry.; 1903 to Oct., 1907, General Manager, Great Northern Ry.; Oct., 1907, to Aug., 1912, General Manager, Chicago, Bur-

[illegible] he resigned on account of ill health.

SIR STEPHEN W. FURNESS, M.P., [illegible] Furness, Withy and Co., and a nephew of the late Lord Furness, who was Hon. President of the Richelieu and Ontario Navigation Co.

JOHN L. WELLER, M. Can. Soc. C.E., Engineer in Charge, Welland Ship Canal, St. Catharines, Ont., whose portrait appears elsewhere in this issue, was born at Cobourg, Ont., Feb. 13, 1862. He entered Dominion Government service in 1882 as Assistant Engineer, Trent Canal, Peterboro, Ont., and was, from 1885 to 1888, Assistant Engineer, Murray Canal, Brighton, Ont.; 1888 to 1900, Resident Engineer, St. Lawrence Canals, Cornwall, Ont.; 1900 to 1912, Superintending Engineer, Welland Canal, St. Catharines, Ont.

F. J. HURKETT, who was recently appointed City Passenger Agent, C.P.R., Calgary, Alta., was born at London, Ont., Dec. 10, 1879, and entered C.P.R. service, Sept., 1897, since when he has been, to June, 1899, city ticket clerk, London, Ont.; June, 1899, to May, 1901, station ticket clerk, London, Ont.; May, 1901, to Nov., 1903, telegraph operator, London, Ont.; Nov., 1903, to Nov., 1904, chief clerk (freight), London, Ont.; Nov., 1904, to May, 1907, not in railway service; May, 1907, to July, 1909, joint ticket agent, C.P.R. and C.N.R., Regina, Sask.; July, 1909, to May, 1912, chief clerk, District Passenger Agent, C.P.R., Brandon, Man.; May, 1912, to Mar., 1913, ticket agent, C.P.R., Calgary, Alta.

V. J. MELSTED, whose appointment as Engineer of Water Service, Western Lines, C.P.R., Winnipeg, was announced in our last issue, was born at Gardar, N.D., Feb. 26, 1887, and entered transportation service, Apr., 1909, since when he has been, to Oct., 1909, instrument man, Great Northern Ry.; Oct., 1909, to Apr., 1910, investigating [illegible] of Manitoba on behalf of a U.S. syndicate; Apr., 1910, to Feb., 1911, instrument man, C.P.R., Winnipeg; Feb., 1911, to Apr., 1913, Resident Engineer, Maintenance of Way, C.P.R., Brandon, Man. Prior to entering transportation service he was, from March to Oct., [illegible] Portland Cement Co., Concrete, N.D.; May, 1907, to Nov., 1908, on the staff of the North Dakota Geological Survey, investigating natural resources of the State; Nov., 1908, to Apr., 1909, engaged [illegible]

H. B. DIBLEE, A.M. Can. Soc. C.E., who has been appointed Superintendent in charge of operation and maintenance of way and structures of the National Transcontinental Ry., between Moncton and Edmundston, N.B., [illegible]

[illegible] entered railway service in 1890, in the Union Pacific Rd. Car Department, Denver, Col., subsequently transferring to the Pennsylvania Rd. service as Car Inspector at Chicago, Ill.; he was from Aug., 1892, to July, 1899 foreman, and General Foreman, consecutively, Car Department, Lake Shore and Michigan Southern Ry., Chicago, Ill.; 1900, General Foreman, Car Department, Long Island Rd.; 1900 to 1904 General Foreman, Car Department, Central Rd. of New Jersey, Elizabethport, N.J.; 1904 to Jan., 1907, Assistant Master Car Builder and Master Car Builder, consecutively, Erie Rd., Meadville, Pa.; Jan., 1907, to July, 1909, Assistant Master Car Builder, C.P.R., Montreal; and in July, 1909, on the retirement of W. E. Fowler, on account of ill health, he was appointed acting General Car Builder, being later confirmed in that position.

E. W. BEATTY, who has been appointed General Counsel, C.P.R., Montreal, was born at Thorold, Ont., in 1877, and moved to Toronto, with his parents in 1887. He was educated with the Model School, Harbord Collegiate, and Toronto University, graduating in 1898. He served his articles with the late D'Alton McCarthy, of the firm of McCarthy, Osler, Hoskin and Creelman, and was admitted to the bar in 1901. On the appointment of A. R. Creelman, K.C., as Chief Solicitor, C.P.R., in 1891, he accompanied him to Montreal, and later succeeded him in that position, as General Solicitor. He is a son of H. Beatty, of the C.P.R. Steamship Office, Toronto, and a brother of Dr. Beatty, Chief Surgeon, Ontario Division, C.P.R., Toronto.

JAMES McLERIE, who died at Dundas, Ont., recently, was born at Kilbarchan, Scotland, Nov. 6, 1850, and entered railway service, March, 1867, since when he was, to 1869, car number taker, Great Western Ry. (now part of G.T.R.), Hamilton, Ont.; 1869 to 1872, yard clerk, same road, London, Ont.; 1872 to 1873, clerk same road, Hamilton, Ont.; 1873 to 1877, cashier, same road, Ingersoll, Ont.; 1877 to 1878, agent, same road, Stratford, Ont.; 1879 to 1880, agent, same road, Tillsonburg, Ont.; 1880 to 1882, special freight agent, Manitoba business, with Traffic Manager, same road, Hamilton, Ont.; 1882 to 1895, Local Freight Agent, G.T.R., Hamilton, Ont.; 1895 to 1897, Contracting Freight Agent, Toronto, Hamilton and Buffalo Ry., Hamilton, Ont.; 1897 to 1904, Contracting Freight Agent, C.P.R., Hamilton, Ont.; Apr., 1904, to Dec., 1908, Northwest Agent, Montreal and Lake Superior Line, Winnipeg. Towards the end of 1908, his health broke down, and he subsequently returned to Ontario, remaining at Dundas, until his death.

F. W. ALEXANDER, A. M. Can. Soc. C.E., whose appointment as Division Engineer, C.P.R., Calgary, Alta., was announced in our last issue, was born at [illegible], N.B., Nov. 22, 1878, and entered railway service, June, 1897, since when he has been, to May, 1898, office boy, Chief Engineer's office, Bangor and Aroostook Ry., Houlton, [illegible] River Ry., Ashland, Me.; Feb., [illegible] vision Engineer, same road, Calgary, Alta.

JAMES BAIN, whose appointment as General Superintendent, Halifax and South Western Ry., Halifax, N.S., together with his portrait, was given in our last issue, was born at Pictou, N.S., May 24, 1860, and entered railway service, May, 1875, since when he has been, to Mar., 1876, operator, Intercolonial Ry., Truro, N.S.; Mar., 1876, to June, 1879, operator and ticket agent, same road Stellarton, N.S.; June, 1879, to Nov., 1881, operator, same road, Truro, N.S.; Nov., 1881, to June, 1882, chief operator Western Union staff, Direct U.S. Cable Co., Tor Bay, N.S.; June, 1882, to Apr., 1886, dispatcher, Intercolonial Ry., at New Glasgow and Truro, N.S., and Moncton, N.B.; Apr. to Oct., 1886, dispatcher, Missouri Pacific Ry., St. Louis, Mo.; Oct., 1886, to May, 1892, Chief Dispatcher, Quebec and Lake St. John Ry., Quebec, Que.; May, 1892, to Nov., 1899, Manager's Assistant, same road; Nov., 1899, to Dec., 1907, Superintendent, Q. & L. St. J.R., Lower Laurentian Ry., and construction of Great Northern Ry. of Canada, Quebec, Que.; Dec., 1907, to May, 1913, Superintendent, Halifax and South Western Ry., Bridgewater, N.S.

A. T. TOMLINSON, M. Can. Soc. C.E., M. Am. Soc. C.E., whose appointment as Chief Engineer, North Ry., Montreal, was announced in our last issue, was born at Grand Falls, N.B., June 22, 1859, and graduated from the Royal Military College, June, 1882, with honors in civil engineering. He was, from July, 1882, to June, 1883, with the Toronto Bridge Co., Toronto; Aug., 1883, to June, 1884, section engineer, Lake Superior Division, C.P.R.; 1886, Engineer of Maintenance, Burlington and Missouri River Rd., Omaha, Neb.; Feb., 1887 to 1890, Assistant Engineer, Denver and Rio Grande Rd., Pueblo and Leadville, Col.; 1891 to 1893, Assistant Engineer, Brooklyn Elevated Ry., Brooklyn, N.Y.; 1894 to 1897, Assistant Chief Engineer, Northwestern Union and Lake St. Elevated Railways, Chicago, Ill.; 1898 to 1902, Consulting Engineer, Boston Elevated Rd., Boston, Mass.; 1902 to 1905, Civil Engineer, J. G. White and Co., New York; 1905 to 1908, Civil Engineer, Canadian White Co., Montreal; 1909 to 1912, District Engineer, G.T. Pacific Ry., Cochrane, Ont. He is also a member of the American Railway Engineering Association. During 1885 he served in the Midland Battalion, in the North West Rebellion.

C. A. HAYES, who has been appointed General Traffic Manager, Canadian Government Railways, was born at West Springfield, Mass., Mar. 10, 1865, and entered railway service in 1882, since when he has been, to 1884, clerk, Freight Auditor's office, Connecticut River Rd., now Boston and Maine Rd.; 1884 to Oct., 1887, similar position, Boston and Lowell Ry., Boston, Mass.; Oct., 1887 to Nov., 1890, clerk, General Freight Agent's Office, Boston and Lowell Ry., and its successor, Boston and Maine Ry., Nov., 1890 to June, 1892, General Freight and Passenger Agent, Central New England and Western Ry., Poughkeepsie, N.Y.; June to Oct., 1892, Division Freight Agent, Philadelphia and Reading Rd., while it had control of the C.N.E. & W.R., Hartford, Conn.; Oct., 1892 to June, 1896, New England Agent, National Despatch Line, Boston, Mass.; June, 1896 to July, 1899, New England Agent and acting General Manager, National Despatch Line, Boston, Mass.; July, 1899 to May, 1903, Manager, National Despatch Great Eastern Line, Buffalo, N.Y.; May, 1903 to Apr., 1908, Assistant General Freight Agent, G.T.R., Chicago, Ill.; Apr., 1908 to Oct., 16, 1911, General Freight Agent, G.T.R., Montreal, Oct. 16, 1911, to June, 1913, Freight Traffic Manager, G.T.R., Montreal.

Transportation Appointments Throughout Canada.

The information under this head, which is almost entirely gathered from official sources, is compiled with the greatest care, so as to ensure absolute accuracy. Anyone who may notice any error in our announcements will confer a favor by advising us.

Canadian Government Railways.—It is unofficially announced that C. A. HAYES, Freight Traffic Manager, G.T.R., Montreal, will become General Traffic Manager, Government Railways, July 1, and that E. TIFFIN, the present General Traffic Manager, will be transferred to Toronto as General Agent.

H. H. MELANSON, heretofore Assistant General Passenger Agent, has been appointed acting General Passenger Agent, vice J. M. Lyons, superannuated. Office, Moncton, N.B.

C. B. BROWN, A.M. Can. Soc. C.E., heretofore Principal Assistant Engineer, Eastern Lines, C.P.R., Montreal, is reported to have been appointed Chief Engineer, Canadian Government Railways. Office, Moncton, N.B.

Canadian Northern Ry.—W. BRYCE, heretofore Locomotive Foreman, C.P.R., Ignace, Ont., has been appointed Assistant Locomotive Foreman, C.N.R., Rainy River, Ont., vice L. H. Boerger, transferred to Duluth, Winnipeg and Pacific Ry. service.

L. DAVIDSON, heretofore moulder, has been appointed foundry foreman, Winnipeg Shops, vice A. Knight, resigned.

Canadian Pacific Ry.—E. W. BEATTY, heretofore General Solicitor, has been appointed General Counsel, vice A. R. CREELMAN, K.C., resigned. Office, Montreal.

A. R. CREELMAN, K.C., General Counsel, having asked to be relieved of his duties that he may enjoy a well earned rest and recreation, the Board of Directors and Executive Officers in acceding to his wish, and accepting his resignation, desire to express their hearty appreciation of his advice and co-operation during the company's most progressive years. He continues his connection with the company as a director, and will act on occasion as Special Counsel.

B. W. ROBERTS, heretofore Commissary Agent, Winnipeg, has been appointed Assistant Chief Commissary Agent. Office, Montreal.

C. B. FOSTER, heretofore General Passenger Agent, Western Lines, lines Revelstoke, B.C., and east, Winnipeg, has been appointed Assistant Passenger Traffic Manager, Eastern Lines. Office, Montreal.

W. MACKLAIER, heretofore chief clerk, Car Service Department, has been appointed Chief Inspector of Weighing and Refrigeration, Eastern Lines. Weighing, refrigeration and heating reports heretofore sent to the Superintendent of Car Service, are now addressed to the Chief Inspector. Office, Montreal.

L. J. ROONEY has been appointed Assistant Commissary Agent at Quebec, Que., vice T. M. McKeown, promoted.

A. E. STEWART, heretofore District Master Mechanic, District 1, Ontario Division, Toronto, has been appointed Master Mechanic on construction, Campbellford, Lake Ontario and Western Ry. (C.P.R.).

A. BINNS has been appointed acting District Master Mechanic, District 1, Ontario Division, Toronto, vice A. E. Stewart, transferred to Campbellford, Lake Ontario and Western Ry. (C.P.R.) construction.

E. J. MURPHY, heretofore Assistant Foreman, West Toronto, has been appointed Locomotive Foreman there, vice F. Ronaldson, transferred.

F. RONALDSON, heretofore Locomotive Foreman, West Toronto, has been appointed Roundhouse Foreman at Lambton, Ont.

R. McLAUGHLIN, heretofore Assistant Foreman, West Toronto, has been appointed Night Roundhouse Foreman at Lambton, Ont.

G. BROWN, heretofore fitter, West Toronto, has been appointed Assistant Night Roundhouse Foreman at Lambton, Ont.

T. G. M. JAMIESON, heretofore chief clerk, city ticket office, Peterboro, Ont., has been appointed city ticket agent, agent, C.P.R. Telegraphs, and Dominion Express Co., at St. Thomas, Ont., vice J. A. Ross, transferred.

J. A. ROSS, heretofore city ticket agent, C.P.R., agent C.P.R. Telegraphs, and Dominion Ex. Co., St. Thomas, Ont., has been appointed to similar positions at Chatham, Ont., vice E. Fremlin, transferred.

A. WILLIAMS, Assistant Superintendent, District 1, Lake Superior Division, has had his office moved from North Bay to Sudbury, Ont.

W. McMULLEN, Trainmaster, Sudbury, Ont., having resigned, the position has been abolished.

C. B. Foster,
Assistant Passenger Traffic Manager, Eastern Lines, Canadian Pacific Railway

F. J. BAIRD has been appointed back shop foreman, Fort William, Ont., vice A. Sturrock, transferred to Vancouver, B.C., as announced in our last issue.

W. W. WEBSTER, heretofore Locomotive Foreman, Winnipeg, has been appointed acting District Master Mechanic, Kenora, Ont., vice A. West, on leave of absence.

J. MORTON, heretofore Night Locomotive Foreman, has been appointed acting Locomotive Foreman, Winnipeg, vice W. W. Webster, promoted.

W. J. ANDREWS has been appointed acting Night Locomotive Foreman, Winnipeg, vice J. Morton, promoted.

J. MORTON, heretofore Locomotive Foreman, Winnipeg, has been appointed Night Locomotive Foreman there.

A. PEERS, heretofore Locomotive Foreman, Brandon, Man., has been appointed Locomotive Foreman, Winnipeg, vice J. Morton, transferred.

D. FORBES, heretofore night coachyard foreman, has been appointed coachyard foreman at Winnipeg, vice H. W. Andrew, resigned.

H. THORNE, heretofore assistant coachyard foreman, has been appointed night coachyard foreman, Winnipeg, vice D. Forbes, promoted.

I. LINDSAY has been appointed assistant coachyard foreman at Winnipeg, vice H. Thorne, promoted.

T. M. McKEOWN, heretofore Assistant Commissary Agent at Quebec, Que., has been appointed Commissary Agent at Winnipeg, vice B. W. Roberts, promoted.

E. L. LANDORPH, heretofore transitman, has been appointed Resident Engineer, Brandon, Man., vice V. J. Melsted, assigned to other duties. Owing to a misprint in our last issue, the name was given as E. Landorth.

G. TWIST has been appointed Locomotive Foreman, Brandon, Man., vice A. Peers, transferred.

W. J. COLEMAN, heretofore Locomotive Foreman at West Roundhouse, Calgary, Alta., has been appointed Locomotive Inspector at Ogden, Alta.

J. G. RUTHERFORD, V.S., Superintendent of Animal Husbandry, Department of Natural Resources, is reported to have also been appointed Superintendent of Agriculture. Office, Calgary, Alta.

Duluth, South Shore and Atlantic Ry., Mineral Range Rd.—E. R. LEWIS, Assistant to the General Manager, is dealing with all matters pertaining to engineering, bridges and buildings, V. D. Simar, Chief Engineer, having resigned. Office, Duluth, Minn.

Duluth, Winnipeg and Pacific Ry.—L. H. BOERGER, heretofore Assistant Locomotive Foreman, Canadian Northern Ry., Rainy River, Ont., has been appointed Locomotive Foreman, D.W. & P.R., at Virginia, Minn.

Grand Trunk Pacific Ry.—A. J. ROBERTS has been appointed Locomotive Foreman at Redditt, Ont., vice J. R. Morton, transferred.

J. R. MORTON, heretofore Locomotive Foreman, Redditt, Ont., has been appointed Locomotive Foreman, Melville, Sask., vice A. McTavish, transferred.

A. McTAVISH, heretofore Locomotive Foreman, Melville, Sask., has been appointed Locomotive Foreman, McBride, B.C., with temporary headquarters at Tete Jaune, B.C.

H. DARLING has been appointed acting Locomotive Foreman, Nicholl, B.C., vice J. Lambie, assigned to other duties.

The following agents have been appointed:—Elie, Man., E. R. Bierwith; Quinton, Sask., J. A. Babin; Landis, Sask., C. J. Leslie; Lebret, Sask., F. Z. Landry; Cudworth, Sask., C. Taylor; Holden, Alta., A. G. Jamieson; Wabamun, Alta., R. E. Kirkpatrick; Dandurand, Alta., J. L. Syrong; Bashaw, Alta., F. S. Benyon.

Grand Trunk Ry.—E. J. McVEIGH, heretofore Storekeeper, Ottawa, has been appointed General Storekeeper. Office, Montreal.

W. J. P. McGREGOR, heretofore in Vice President's office (traffic), Montreal, has been appointed Commercial Agent, Moncton, N.B., vice James Edward, whose appointment as Division Freight Agent, Ottawa, was announced in our last issue.

J. H. FARRAR has been appointed Storekeeper, Point St. Charles General Stores, Montreal, vice H. Clarke, retired under the provisions of the pension fund.

W. M. TISDALE has been appointed Special Agent, Eastern Lines, not Chief Special Agent, as mentioned in our last issue, vice J. H. Hodge, transferred to Toronto. Office, Montreal.

E. LOGAN has been appointed General Foreman, Toronto Shops, vice G. M. Wilson, assigned to other duties.

A. C. O'NEIL has been appointed Travelling Freight Agent, Hamilton, Ont., vice A. S. Munro, appointed Commercial Agent there, as announced in our last issue.

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[illegible] ledge.

[illegible] personal injury, live [illegible]

[illegible] Albertson; North Parkdale Jct., Ont., F. E. [illegible] Niagara Falls, Ont. (Pass.), A. R. [illegible] Monagle; Tillsonburg, B. & T., Ont., P. B. [illegible] kerton, Ont., N. A. Walford; Dalkeith, Ont., [illegible] will; Rose Point, Ont., A. H. Johnston; the station at Rymal, Ont., and the outside agency at King Edward Hotel, Toronto, [illegible]

Intercolonial Ry.—[illegible]

Michigan Central Rr.—[illegible] to other duties. Office, St. Thomas, [illegible]

National Transcontinental Ry.—See Intercolonial Ry.

[illegible]

Book Reviews.

[illegible]

THE FIELD ENGINEER'S HAND BOOK—By G. Carveth Wells, A.C.G.I., [illegible] Railways, late of the Grand Trunk Pacific Ry., and A. S. Clay, B. Sc., A.C.G.I.; [illegible] Eng., Edward Arnold.

We submitted this book to H. K. Wick- [illegible]

It has always seemed to the writer that a field book should be one containing only the essentials for field work, the tables and formulae for which it is not safe to [illegible] them line or level, while he studies out the reasons for doing things in a certain way [illegible] hours.

[illegible] ally, and in [illegible]

E. W. Beatty,
General Counsel, Canadian Pacific Railway.

unit of length for land surveying 66 ft. (Gunter's chain) cannot be excelled." We are rather unfortunately compelled, on account of old records, to use Gunter's chain at times, but in modern work the foot is the almost universal standard on this continent, except where the metric system is employed, and as to convenience, while the 66 ft. chain may be handier and lighter than the 100 ft. chain, the modern metal band is so much lighter than the chain that the 100 ft. standard is entirely unobjectionable and almost universal in railway work.

A chapter is devoted to the railway transition curve and at the very outset the authors make the following very extraordinary statement: "In order that the coach should not leave the track it is plain that the resultant of these two forces (gravity and centrifugal), must act between the rails and if possible be perpendicular to the cross section (plane) of the track, so that there may be no side thrust on the rails." The idea that centrifugal force is the only one producing a "side thrust on the rails," and that mere elevation is capable of obviating the latter, is so old and has been so long disproved and abandoned that it is rather a shock to find it being put forward with such evident claims to scientific knowledge as these.

The chapters on astronomy, and on finding of azimuth and position, are well worth reading, as is the whole book by the student of elementary problems, but it is a pity that the errors and misconceptions referred to should have been incorporated and that the writers should not have been more familiar with Canadian practice and ideas.

Delaware and Hudson Co.'s Report for 1912.

The annual report of the D. & H. Co for the year 1912 has been issued. The coal mining department shows a net revenue of $469,326.88, and the railway [illegible] for the year 1913, payable quarterly.

The company owns the Quebec, Montreal and Southern Ry. and the Napierville Junction Ry. in Canada. The accounts of these companies are included in the general statement, but the directors say in regard to them as follows:—The Quebec, Montreal and Southern Ry. shows an increase in operating revenues of $25,466.20 for 1912, as compared with the previous year. The operating expenses increased $16,169.96. The net income, independent of interest [illegible] 378.98, an increase of $19,559.18. The Napierville Junction Ry. shows an increase in operating revenues for 1912 of $12,400.11 [illegible] or 3.23% on the capital stock outstanding. The operating expenses increased by reason of the severe weather conditions in the early part of the year; also by extensive repairs to locomotives. Personal injury [illegible]

[illegible] $1,000,000 common stock of the Quebec, Montreal and Southern Ry. and [illegible] stock of the Napierville Junction Ry.

Railway Route Map Approved.—The Minister [illegible]

Canadian Railway
AND
Marine World
Established 1898

Devoted to Steam and Electric Railway, Marine, Express, Telegraph, and Railway and Canal Contractors' Interests.
Official Organ of the various Canadian Transportation Associations.

ACTON BURROWS, LIMITED - Proprietors.
70 Bond Street, Toronto, Canada.

ACTON BURROWS, A.Can.Soc.C.E.
Managing Director and Editor-in-Chief.
AUBREY ACTON BURROWS - Secretary and Business Manager.

Associate Editor - - JOHN KEIR
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NOTICE TO ADVERTISERS.

ADVERTISING RATES furnished on application.

ADVERTISING COPY must reach the publishers by the 10th of the month preceding the date of publication.

TORONTO, CANADA, JULY, 1913.

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A Clumsy Theft of Canadian Northern Railway Information.

In May a prominent official of the Canadian Northern Ry. system, in response to our request, supplied us with some official information in regard to the Toronto-Ottawa section of the Canadian Northern Ontario Ry. and also with reference to the projected line from north of Parry Sound to Callendar. This was published in Canadian Railway and Marine World as follows:—

"Canadian Northern Ontario Ry.—The last section of the Toronto-Ottawa line to be completed is that between the Jack River and Smiths Falls, Ont. The ballasting and final completion of the line will take several months.

"We are officially advised that the company has a route surveyed for a line from north of Parry Sound to Callendar, Ont., but it is not likely that the line will be built this year. The proposed line leaves the Toronto-Sudbury line at mileage 170 north of Toronto, and runs northeasterly through the villages of Whitestone, Golden Valley, Restoule and Nipissing to a junction with the company's transcontinental line near Callendar. The standard of curvature will be six degrees, although there will be one or two which will be temporarily sharper. The line will cross the Whitestone, Maganatawan, Pickerel, Commanda Creek, and Wistiwasing streams. The crossings of the Maganatawan and South Rivers are the only crossings of any moment—the former comprising a deck span of 100 ft. and some 300 ft. of trestle approach, 45 ft. above the water; and the latter 300 ft. long and 25 ft. high. There is a very large quantity of timber to be brought out from the townships of Mackenzie, Mills and Patterson, the estimate is from 350 to 400 million feet, 100 million feet being pine. Aside from running through this area of timber, the line traverses for over half the distance a very fair agricultural country, which has been settled since the early days of the lumber industry."

The Theft Exposed.

Canadian Machinery, published in Toronto, appropriated the above matter and reproduced it in its issue of June 12, without giving any credit to Canadian Railway and Marine World, for which it was specially written. But the scissors and paste editor did his work clumsily, as Canadian Pacific Ry. was substituted for Canadian Northern Ry. This is how he reproduced our article:—

"The last section of the Toronto-Ottawa line of the C.P.R. to be completed is that between the Jack River and Smiths Falls. The ballasting and final completion of the line will take several months. It is officially announced by the **C.P.R.** that the company has a route surveyed for a line from north of Parry Sound to Callendar, Ont., but it is not likely that the line will be built this year. The proposed line leaves the Toronto-Sudbury line at mileage 170 north of Toronto, and runs northeasterly through the villages of Whitestone, Golden Valley, Restoule and Nipissing to a junction with the company's transcontinental line near Callendar. The standard of curvature will be six degrees, although there will be one or two which will be temporarily sharper. The line will cross the Whitestone, Maganatawan, Pickerel, Commanda Creek and Wistiwasing streams. The Maganatawan and South Rivers are the only crossings of any moment—the former comprising a deck span of 100 feet and some 300 feet of trestle approach, 45 feet above the water; and the latter 300 feet long and 25 feet high. There is a very large quantity of timber to be brought out from the townships of Mackenzie, Mills and Patterson, the estimate being from 350 to 400 million feet, 100 million feet of which is pine. Aside from running through this area of timber, the line traverses for over half the distance a very fair agricultural country, which has been settled since the early days of the lumber industry."

C.P.R. officials will be rather amazed to read that they are building a line between Toronto and Ottawa and that they have surveyed a line from north of Parry Sound to Callendar.

MORAL.—Don't steal, but if you do, it is advisable to conceal your tracks.

A Railway Company's Liability for Loss of Baggage.

Canadian Railway and Marine World for June contained on pg. 258 the full judgment of County Court Judge Denton, of Toronto, awarding Harriet E. Spencer $340.50, in a case in which she claimed $500 damages from the C.P.R. for breach of contract in carrying a trunk from St. Thomas to Toronto, or for conversion. The C.P.R. appealed the case and on June 16 the Appellate Division of the High Court of Judicature of Ontario gave the following judgment:—

In the absence of a special contract the defendant company as a common carrier became liable generally for the safe delivery of the trunk. The onus therefore is on it to show assent, actual or constructive, on Mrs. Spencer's part to the condition pleaded in modification of the contract implied by law. Whether there has been any such assent is a question of fact. Here the findings of the trial judge are in substance to the effect that no notice was given to the plaintiff or to the taxicab driver of the condition on the check, that the plaintiff supposed the check to be a mere receipt for the trunk, and that obviously she in no way expressly or impliedly assented to any contract except such as grew out of the delivery of the trunk to the defendant company (common carrier) and its acceptance by the company for carriage. Appeal dismissed with costs.

Gas Electric Car on Quebec and Lake S. John Railway.

The gas electric car for the Quebec and Lake St. John Ry., described in Canadian Railway and Marine World for April and May, 1912, operated from May 1 to Oct. 1, 1912, very successfully, running between Quebec and Lake St. Joseph, 22 miles, making 4 round trips daily, a total daily distance of 175 miles. The actual operating cost was about 16c a mile, exclusive of general repairs.

The car was placed in service to provide a more frequent service and encourage suburban traffic. A considerable increase in traffic was experienced, and as last year's operation was in the nature of an experiment, it is anticipated that this year will see a much greater proportionate increase in the suburban traffic handled. The absence of smoke and cinders in its operation makes it conducive to the development of tourist traffic.

This car is self propelled by electric motors on the forward truck, receiving their energy direct from a 375 h.p. generator in the forward compartment of the car, direct connected to a 6 cylinder gas engine. The car is 54 ft. long, with a seating capacity of 76, and is capable of attaining a speed of 55 miles an hour.

Proposed Government Railway Ownership in Alaska.

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

Canadian Pacific Railway Company

NORTH TORONTO GRADE SEPARATION

Notice to Contractors

[illegible]

[illegible]

[illegible]

Canadian Northern Railway Earnings, Etc

[illegible]

[illegible]

Canadian Pacific Railway Earnings, Etc

[illegible]

[illegible]

Grand Trunk Railway Earnings, Etc

[illegible]

Grand Trunk Pacific Railway Earnings

[illegible]

[illegible]

Decision on Alberta Legislation

[illegible]

Railway Subsidy Contract.—[illegible]

Department of Railways and Canals, Canada.

TRENT CANAL.

Steel Pontoon Gate Lifter.

NOTICE TO CONTRACTORS

S[illegible]

[illegible]

Railway Development

Projected Lines, Surveys, Construction, Betterments, Etc.

Alberta Interurban Ry.—The Dominion Parliament has confirmed the appointment of the directors as made at a meeting held April 16, 1912, and has validated their subsequent acts (April, pg. 168.)

Algoma Eastern Ry.—A train service was put in operation on the line from Sudbury to Espanola, Ont., 40 miles, June 2. Construction on the line from Espanola to Little Current, Manitoulin Island, has been completed, and it is expected that the train service will be extended to the latter point early in July. (May, pg. 219.)

Athabasca and Grande Prairies Ry.—The Dominion Parliament has incorporated a company with this title to build a railway from the junction of the Athabasca and Solomon Rivers northwesterly to the junction of the Smoky and Muskeg Rivers, thence through the Grande Prairies country west of Beaver Lake, to Dunvegan, Alta. (Feb., pg. 83.)

Blomidon Ry.—The Nova Scotia Legislature has extended the time within which the company may build the lines authorized by chap. 111 of the statutes of 1911. (Oct., 1911, pg. 935.)

British Columbia and White River Ry.—The Dominion Parliament has extended the time within which the company may build the lines authorized by chap. 45 of the Statutes of 1911. (Jan., pg. 20.)

Buctouche Ry. and Transportation Co.—The Dominion Paliament has authorized the company to change its name to the Moncton and Northumberland Strait Ry., and has extended the time for the building of the extensions authorized. (Jan., pg. 20.)

Calgary and Fernie Ry.—The subsidy voted by the Dominion Parliament in 1912, for the building of a line from between Michel and Sporwood, northerly by the headquarters of the Elk River, and Kananaskis Pass, to Calgary, Alta., 100 miles, has been renewed. The Minister of Railways said under the original subsidy the line was to have started at Calgary, now it is to start from near Fernie. The directorate includes G. A. Fraser and S. S. Mahon. (May, 1912, pg. 238.)

Canadian Central and Labrador Ry.—The Dominion Parliament has incorporated a company with this title to build a railway from near Cochrane, Ont., to the Atlantic coast of Quebec Labrador. (Feb., pg. 83.)

Canadian Northwestern Ry.—The Dominion Parliament has incorporated a company with this title to build the line already described. The provisional directors are:—Lord Howard de Walden, Lord Clinton, Lord Montagu of Beaulieu, England; W. F. Morgan, Jr., Paris, France; H. E. Brittain, F. W. Barker, London, England. (April, pg. 167.)

Cape Breton Coal, Iron and Ry. Co.—A Sydney, N.S., press report states that negotiations are in progress with the Sydney and Louisburg Ry. to secure running powers over that line to Louisburg.

The Nova Scotia Legislature has extended the time within which the company may build the lines authorized by chap. 110 of the statutes of 1895 and acts amending the same.

We are officially advised that work has been carried on all winter on the extension of the line to Mira, and the company is waiting for the Dominion Government to proceed with the construction of the breakwater to continue the building of the railway. H. Mayhew, Broughton, N.S., is Managing Director. (Dec., 1912, pg. 604.)

Central Ry. of Canada.—The Railway Committee of the House of Commons rejected the company's application for an extension of time, and other powers, recently. Following this the bill was introduced into the Senate and passed, but when it came before the House of Commons for consideration, June 2, a resolution was passed directing it to be dropped from the order paper. (May, pg. 219.)

Esquimalt and Nanaimo Ry.—The Board of Railway Commissioners has authorized the opening for traffic of the Cowichan Lake Branch from Hayward Jct. to Cowichan Lake, B.C., 18 miles.

The reconstruction of the original line from Victoria to Wellington, which has been in progress ever since the C.P.R. obtained control, is almost completed. The work laid out for this year includes the replacing of the last 12 wooden bridges with steel spans.

The improvements proposed to be made on the line during this year will involve the expenditure of $1,000,000, according to a recent statement of R. Marpole, Vice President. (May, pg. 219.)

Fredericton and Grand Lake Coal and Ry. Co.—Work has been started on the completion of the main line from near Fredericton to Minto, N.B., and on the branch from Fredericton to Marysville by the general contractors, A. E. Trites and Son, who have sublet the concrete work on the branch line to G. F. Baird, Fredericton. (May, pg. 219.)

Glengarry and Stormont Ry.—The Dominion Parliament has incorporated a company with this title. (May, pg. 219.)

Great Eastern Ry. of Montreal.—A company with this title, Robert Sevart, President, has been registered as doing business in Montreal, but we have been unable to locate it or to ascertain anything about it. No company with this title appears to have been incorporated either by the Dominion Parliament or the Quebec Legislature.

Hudson Bay, Peace River and Pacific Ry.—The Dominion Parliament has extended the time within which this projected railway may be built. (Feb., pg. 83.)

Intermarine Ry. and Navigation Co.—Press reports state that the projected route of this line is from near the head of Lake Winnipeg, north easterly for 122 miles, to a junction with the Dominion Government railway to Hudson Bay, at mileage 191 from Pas, Man.; that both steam and electricity will be used for motive power, and that it is expected to let contracts for the building of the line in the spring of 1914. W. S. Boyd, 715 Somerset Block, Winnipeg, is acting secretary of the provisional directorate. (April, pg. 169.)

Kettle Valley Lines.—The Dominion Parliament has revoted the subsidies granted in 1910 for the building of the following lines:—From Merrit to Penticton Wharf, 135 miles; from a point on above line to Midway, 136 miles; from a point on first-mentioned line 23 miles south of Merrit to near Hope Station on the Fraser River, 55 miles. The Minister of Railways stated recently that $353,709 had been paid on account of these subsidies, representing 18% on the first and 34% on the second. The company has 101 miles of the line in operation and 43 under construction.

A contract under the act granting aid to certain railways was entered into with the company, April 2, for the building of a line from near Coldwater to the Fraser River, B.C., 50 miles, but has only just been formally signed. (May, pg. 278.)

Lake Erie and Northern Ry.—The contractors are reported to be making rapid progress with the grading on this line from Port Dover to Galt, Ont. The rails and ties are being delivered. A contract has been let for the removal of houses on the right of way in Brantford. It is expected that track laying will be started early in July. (May, pg. 220.)

Lake Huron and Northern Ry.—We are officially advised that the line built by the old Bruce Mines and Algoma Ry., 17 miles, is somewhat out of repair, but it is expected to put it in proper condition this summer, and to make a start on the projected extension northerly. The permanent board of directors of the reorganized company has not been elected, the acting officers of the company being:—President, G. P. McCallum; Vice President, H. Appleton. The offices are at Sault Ste. Marie, Ont.—(See Bruce Mines and Algoma Ry., May, pg. 219.)

Little Nation Ry.—The Dominion Parliament has renewed the subsidy voted in 1910 for the building of a railway from the C.P.R., between Thurso and Montebello, Que., northerly for 30 miles. No construction has been done. (Dec., 1912, pg. 615.)

Lotbiniere and Megantic Ry.—The Dominion Parliament has revoked the subsidy granted in 1910 for the building of a railway from Lyster to Lune Ridge, Que., 60 miles. The Minister of Railways said recently that the company has built from St. Jean des Chaillons toward Glenroy to Lyster. There has been $96,000 paid on account of the line already built. (Jan., 1912, pg. 22.)

Margaree Coal and Ry. Co.—The Dominion Parliament has granted a subsidy, not to exceed $6,400 a mile, for the following lines in lieu of the subsidy voted in 1911:—From the Intercolonial Ry., near Orangedale, to St. Rose, N.S., 46 miles, and from the Intercolonial Ry., near McIntyre Lake, to Caribou Cove, Port Malcolm, N.S., four miles. The Minister of Railways informed the House of Commons, June 3, that no construction had been done on the line, but the applicants stated that financial arrangements had been made for immediate construction. The applicants were A. W. Chisholm, C. E. Sherman, J. D. Taylor, T. S. Courtenay. (May, 1911, pg. 411.)

Michigan Central Rd.—We are officially advised that construction has been started on the new 13-stall locomotive house at St. Thomas, Ont. The contractors are the Arnold Construction Co., Chicago, Ill., who also prepared the plans. (May, pg. 220.)

Mid Provincial and Nechaco Ry.—The British Columbia Government has granted the company an extension of time to Dec. 31, to complete surveys and file plans, etc. (April, 1911, pg. 321.)

Naas Valley and Northern Ry.—The Dominion Parliament is being asked to incorporate a company with this title to build a railway from the mouth of the Naas River to the Stikeen River, B.C.; thence northerly along the Teslin Lake to the junction with Yukon Territory. Smith and Johnston, Ottawa, are solicitors for applicants. The bill had not been passed through all its stages when Parliament prorogued.

New Brunswick Coal and Ry. Co.—Press reports state that the C.P.R. has made an appropriation of $117,000 for the betterments of this line, which is to be taken over from the New Brunswick Government, and operated in connection with the Fredericton and Grand Lakes Ry. and Coal Co.'s line, now nearly completed. The principal work to be done will be the putting in of permanent concrete piers for the bridges, and the general improvement of the roadbed. The work will be started during the summer. (June, 1912, pg. 301.)

Newfoundland Labrador.—The Newfoundland Legislature has authorized the Canadian North Atlantic Corporation to build a railway from the eastern boundary of Canadian Labrador, through Newfoundland Labrador, to Cape St. Charles, or such other point as may be approved by the Government, as part of a line which is projected to run from Quebec City. The company is granted 6,000 acres of land a mile in aid of construction. On completion of this line the company is authorized to build a branch line to a point between Bradore Bay and Cape St. Charles, to operate a car ferry therefrom to the Newfoundland coast, at Bonne Bay, and to build a railway thence to connect with the Newfoundland system. Under certain conditions the Government may build this latter piece of line. Plans for the line through the Newfoundland Labrador have to be filed within two years.

Sir Thos. Skinner, Bart., of London, Eng., who is a director of the C.P.R., advises us that he is not interested in the Canadian North Atlantic Corporation, as reported, and that he knows nothing of it.

North Ry.—We are officially advised that the names and addresses of the engineers in charge of locating parties on this projected railway are as follows:—Alex. McLellan, Rivington, Que.; W. S. Robertson, Bell River, Que., via Cochrane, Ont.; H. B. Tourigny, River Desert, Que., via Maniwaki, Que.; J. F. Rose, Duhamel, Que.; A. W. Whitney, Cochrane, Ont. June, pg. 278.)

Northern New Brunswick and Seaboard Ry.—A subsidy not to exceed $6,400 a mile, upon the usual conditions, has been granted for the building of the following line in lieu of that voted in 1912:—From Drummond Mines at Austen Brook to the Intercolonial Ry., where it intersects the branch line from Bathurst Station to Bathurst Harbor, N.B., 16.9 miles. This line is already built to the Intercolonial Ry. rather less than 16 miles, and it is to be extended to Bathurst Harbor, which is being dredged. The Minister of Railways stated recently that the original subsidy was for 26 miles, but it had been found that better harbor accommodation could be obtained by dredging out Bathurst harbor than by going further on. (Oct., 1912, pg. 502.)

Northern Pacific Ry.—J. M. Hannaford, Second Vice President, accompanied by a number of officials paid a visit to Vancouver recently. In an interview he is reported to have stated that the company will be running its trains into the city within a year, over the Great Northern Ry. tracks from Cloverdale. The section of the old New Westminster Southern Ry. from Sumas to Cloverdale will be rebuilt to make this connection, and the Great Northern Ry. passenger station will be used, but the N.P. Ry. will provide its own freight terminals.

It was reported recently that the company was negotiating for the purchase of the Kitsilano Indian Reserve, which adjoins the False Creek area, which is being laid out by the Great Northern Ry. and the Canadian Northern Ry. for their terminals. (April, pg. 169.)

Pacific and Peace River Ry.—The Dominion Parliament has extended the time within which the lines authorized by chap. 127 of the statutes of 1911 may be built. (Feb., pg. 84.)

Pacific Great Eastern Ry.—A survey party has started work at Soda Creek and Quesnel, locating the line between Lillooet and Fort George, B.C. Construction between Newport and Lillooet is being rapidly pushed and some clearing is being done beyond Lillooet. It is expected that the section from North Vancouver to Newport on Howe Sound will shortly be put under construction. (June, pg. 278.)

Pere Marquette Rd.—Press reports state that the company is expending a considerable sum upon the improvement of its terminal facilities at Rondeau, Ont., which is on the company's own line, to which point it has been gradually diverting the business at one time carried to Port Stanley, the terminal of the London and Port Stanley Ry. The latter line is being operated by the P.M. Rd., under a lease which is near its expiration.

Pointe aux Trembles Terminal Ry.—The Dominion Parliament has incorporated a company with this title to build a terminal railway and other facilities at Pointe aux Trembles, Que. (April, pg. 169.)

Prince Edward Island Ry.—The Dominion Parliament has voted the following sums on account of this line, in addition to those already mentioned in these columns:—To increase accommodation and facilities along the line, $5,000; to provide car ferry and make necessary alterations incidental thereto, including change from narrow gauge to standard gauge, $1,000,000. The Minister of Railways stated recently that the contract for the car ferry had been let to Sir W. G. Armstrong Whitworth and Co. for $138,000; that for the pier at Cape Tormentine to A. P. Mackie for $571,590; and that at Carleton Point to the Halifax Dredging Co. for $199,493. These amounts it was estimated would complete the piers and ferry ready for service. It is not intended to do anything on the way of altering the gauge of the railway this year, and nothing has been decided as to how this is to be done. Engineers have been working on the matter, and the question of laying down a third rail is being considered. The Halifax Dredging Co. has twice thrown up the contract for the Carleton Point terminals, and new tenders have been invited. (April, pg. 169.)

The Halifax Dredging Co. has abandoned the contract for the building of the car ferry slip at Carleton Point, P.E.I. The company desired to use P.E.I. sandstone in the work, but as its durability is questioned the Government refused to sanction it. The estimated cost of the work is $700,000. New tenders have been invited, to be submitted by July 2.

Reid Newfoundland Co.—Press reports state that the company has ordered 6,000 tons of steel rails. Construction has been resumed on the Trepassey branch line, the construction headquarters having been moved to Stag's Head, Nfld. It is expected to have this branch completed in August. Rapid progress is reported to have been made with the building of the Trinity spur line. (April, pg. 169.)

The Newfoundland Legislature has authorized the company to build a line from near Broad Cove to Heart's Content, and a branch line from Carbonear, extending along the north shore of Conception Bay to Grate's Cove, instead of the line from Broad Cove to Heart's Content and Gnates Cove, mentioned in the act of 1910. The subsidy granted in 1910 is made applicable to the relocated line.

St. John and Quebec Ry.—Track laying was started at Fredericton, N.B., May 27, on the first section of the line. Connection is made with the C.P.R. near Victoria Mills, by a switch, over which the steel is being taken on to the grade. (April, pg. 170.)

The Dominion Parliament has voted $6,400 a mile upon the usual conditions, in lieu of the subsidy of 1912, for the building of a line from Andover to St. John, N.B., 200 miles. This subsidy covers all the bridges on the line except those across the St. John River at Mistake, and across the Kennebecasis River at Perry Point.

The Minister of Railways, in reply to questions June 3, said there was no settled policy that the line would be built to Grand Falls. This would necessitate the building of an expensive bridge, and before the Government would subsidize the building of the additional 25 miles more information would have to be obtained as to the prospects than was at present available. The C. P. R. had offered to give the line running powers over its line from Andover to Grand Falls. (Feb., pg. 84.)

Scotstown or Megantic, to International Boundary.- The Dominion Parliament has renewed the subsidy voted in 1907, to aid in the building of a railway from the C.P.R., at Scotstown or Megantic, Que., to the International boundary, 35 miles.

Southampton Ry.—In 1911 the New Brunswick Legislature granted aid towards the building of a railway, from Mellville to Pokiok Bridge, N.B., 13 miles. At the last session it increased the total amount of aid given by way of a guarantee of bonds, from $130,000 to $156,000, the first instalment of $50,000 to be issued on the completion of five miles of line, the second instalment of $50,000 on the completion of ten miles of line, and the balance on the completion of the line to the St. John River. The line has been practically completed, and it will be operated by the C.P.R. (Feb., pg. 84.)

The Minister of Railways informed the House of Commons recently that a subsidy contract had been signed with the company under the terms of the act granting aid to certain railways. The line was to be 13 miles long, and $48,442.88 has been paid on account of the subsidy.

By Dominion legislation the company is authorized to dispose of its line to the C.P.R.

Taber Transit Co.—Press reports state that it is hoped to be able to let a contract at an early date for the building of a line northerly from Taber, Alta., to the coal mines at Retlaw and Bow City. The work will be light, mostly earthwork, with about 20,000 cubic yards of rock, the approximate cut averaging about 5,000 cubic yards a mile, and the fill about 7,000 cubic yards a mile. The maximum gradient will be 1.9% and the maximum curvature 10 degrees. There will be eight short pile trestles, one steel bridge 420 ft. long, four stations, 12 freight sheds, and other necessary buildings. A coal and grain traffic is to be catered for. The company has power to use electricity as a motive power. J. V. Kramer is President, and V. O. Eastland is Chief Engineer. (Apr., pg. 170.)

Timiskaming and Northern Ontario Ry.—We are officially advised that it is expected to increase the capacity of the repair shops at North Bay, Ont., during this year, but that the plans have not been definitely settled. Press reports stated that plans had been prepared for new shops and increased terminal yards to cost $350,000, and that it was probable that a contract for the work would be let to Sherwood and Sherwood, North Bay. (May, pg. 220.)

The Dominion Parliament has authorized the payment to the Province of Ontario of a subsidy of $6,400 a mile for the following lines which have been built, and are being operated by the T. & N.O.R. Commissioners. From North Bay to Cochrane, Ont., 252.8 miles; branch from Englehart to Charlton, 7.8 miles; branch from Cobalt to Kerr Lake, 3.9 miles; branch from Iroquois Falls to Timmins, 33.2 miles; branch from Earlton to Elk Lake City, 28.5 miles; branch from Iroquois Falls Jct. to Iroquois Falls, 7.25 miles. (May, pg. 220.)

Tobique and Campbellton Ry.—The Dominion Parliament has voted a subsidy at the usual rate and upon the ordinary conditions, for the building of a line from Plaster Rock, along the Tobique River valley, to Riley Brook, N.S., 28 miles. This is in lieu of the subsidy voted in 1910. The Minister of Railways said recently that he had received an assurance from the company that it was ready to go ahead with construction. The directors include D. Fraser, A. Fraser, H. N. Murchie. This line is an extension of the Tobique Valley Ry. now terminating at Plaster Rock, and operated as a C.P.R. branch. (May, pg. 220.)

Toronto, Hamilton and Buffalo Ry.—An alternative plan for the removal of grade crossings in Hamilton, Ont., has been submitted to the Board of Railway Commissioners. The company proposed a system of track elevation, but the citizens objected on the ground of its expense, and secured the advice of an engineer, who prepared plans showing depressed tracks, the cost of carrying out which he claimed would be considerably less than the $2,900,000 which the company estimated the track elevation would cost. The estimate was not made public, but it was arranged that the whole matter would be gone into at a conference of engineers.

We are officially advised that grading for a second track between Welland and Fenwick is in progress, and all passing sidings between Hamilton and Welland are being extended to accommodate 90 cars. New passing sidings are also being established at some additional stations between these points. The second track is being built alongside the present track, and there are no diversions. No changes are being made in the grades, as the line is practically level from Vinemount east to Welland. The grading is very light and will not average over 2,500 cubic yards to the mile. The line will be laid with 100 lb. steel. The contractor is J. L. Boyd, Toronto, and the work is being carried out under the supervision of R. L. Latham, Chief Engineer. (May, pg. 220.)

Van Buren Bridge Co.—The Dominion Parliament has vested in the V.B.R. Co. the charter rights of the Restigouche and Western Ry. (now known as the International Ry. of New Brunswick), to build a railway bridge across the St. John River at St. Leonards, N.B. (May, pg. 220.)

Western Dominion Ry.—Press reports state that Great Northern Ry. interests have acquired the charter rights of the W.D. Ry. O. E. Culbert, Ottawa, the company's solicitor, was in Calgary, Alta., June 8, in connection with the company's interests, but refused to make any statement. (Feb., pg. 84.)

White Pass and Yukon Route.—O. L. Dickeson, arrived in Vancouver, B.C., June 3, and proceeded to Skagway and Dawson City, to inspect the line, and to give consideration to plans for its extension. In an interview at Vancouver he is reported to have stated that if the Canadian and United States Governments would grant subsidies the company would extend its line from White Horse down the Yukon River to Dawson, Yukon, and Fairbanks, Alaska.

Railway Rolling Stock Notes.

The Quebec Central Ry. has received a 10 wheel locomotive from Canadian Locomotive Co.

The Duluth, Winnipeg and Pacific Ry. has received 300 box cars from Mount Vernon Car Mfg. Co.

The Algoma Central and Hudson Bay Ry. has ordered a baggage car from Canadian Car and Foundry Co.

The St. Lawrence Bridge Co. has ordered 4 steel underframe flat cars, 40 tons capacity, and 4 pairs of trucks, 50 tons capacity, from Canadian Car and Foundry Co.

The C.P.R., between May 14 and June 12, ordered the following rolling stock:—6 refrigerator freight cars, 16 vans, 7 stock cars, 1 box baggage car and 10 class U3 locomotives, from its Angus Shops; and 11 Bucyrus ploughs and 3 Western spreaders, from Mussens Limited.

The Mond Nickel Co. has ordered 12 Otis all steel ore cars from Hart-Otis Car Co. Following are chief dimensions:

Length over end sills	21 ft. 0½ ins.
Length inside	19 ft. 0 ins.
Width over all	9 ft. 11¼ ins.
Width inside	9 ft. 6 ins.
Height inside	4 ft 6 ins.
Height from rail	8 ft. 10 13-16 ins.
Number of doors on each side	4
Capacity	100,000 lbs.

In response to questions in the House of Commons recently, the Minister of Railways and Canals, in referring to the appropriation of $1,000,000 for rolling stock for the Intercolonial Ry., stated that on account of that sum, 400 steel frame cars and 20 freight locomotives had been ordered. The cost of the locomotives was $470,000, and of the freight cars $484,000, while inspection, etc., made up the balance.

The Canadian Northern Ry., between May 15 and June 13, received the following additions to rolling stock:—7 consolidation locomotives, from Canadian Locomotive Co.; 15 heavy ten wheel locomotives, from Montreal Locomotive Works; 6 first class cars, 5 baggage cars, and 50 box cars, from Canadian Car and Foundry Co.; 2 combination cars, from Preston Car and Coach Co.; 5 second class cars and 100 flat cars, 60,000 lbs. capacity (a further 41 have since been delivered), from Crossen Car Co.; 170 Hart cars, from Hart-Otis Car Co.

The Canadian Car and Foundry Co., between May 15 and June 15, delivered the following rolling stock:—to Canadian Northern Ry., 165 wooden ballast cars 40 tons capacity, 5 first class cars, 3 wooden baggage cars and 97 wooden box cars 30 tons capacity; to C.P.R., 553 box cars 40 tons capacity, 10 steel underframe flat cars 40 tons capacity, 200 ballast cars 50 tons capacity, 78 steel underframe stone cars 40 tons capacity, 6 plough cars and 7 wooden tourist cars; to Dominion Iron and Steel Co., 39 quarry cars; Hart-Otis Car Co., 3 plough cars; International Ry., 89 steel frame box cars 40 tons capacity, 4 steel frame box cars 30 tons capacity, 81 Hart ballast cars 40 tons capacity; Toronto, Hamilton and Buffalo Ry., 42 wooden ballast cars 40 tons capacity; Montreal Tramways Co., 3 steel street car bodies.

The C.P.R., between May 14 and June 12, received the following additions to rolling stock:—174 freight refrigerator cars, 45 stock cars, 8 horse cars, 9 suburban cars, 5 dining cars, 5 box baggage cars, 10 sleeping cars, 16 baggage and express cars, 8 class E3 and 1 class U3 locomotives, from its Angus Shops; 474 steel frame box cars, 19 steel flat cars, 177 ballast cars, 59 stone cars, and 4 tourist cars, from Canadian Car and Foundry Co.; 276 steel frame box cars, from National Steel Car Co.; 157 steel frame box cars, from Nova Scotia Car Works; 4 Lidgerwood unloaders, from Canadian Allis-Chalmers Ltd.; 3 Jordan ballast spreaders, 2 Industrial wrecking cranes and 3 Rodger ploughs, from F. H. Hopkins and Co.; 1 Bucyrus steam shovel, 10 Bucyrus ploughs and 3 Western spreaders, from Mussens Limited; 20 class G2 locomotives, from Montreal Locomotive Works; 10 sleeping cars, from Pullman Co.; 54 air dump cars, from Western Wheeled Scraper Co.; and 240 steel frame box cars, from Barney and Smith Car Co.

Railway Finance, Meetings, Etc.

Algoma Central and Hudson Bay Ry.—A special meeting of shareholders was called to be held at Sault Ste. Marie, Ont., June 16, to pass bylaws as to the number of directors, and the quorum necessary for a meeting.

Canadian Northern Ry.—Winnipeg and Northern Ry.—The Board of Railway Commissioners has recommended the Governor-in-Council to approve of the agreement amalgamating the W. & N. Ry., with the C.N.R. The W. & N. Ry. is a short line running out of Winnipeg, which has always been a C.N.R. line.

Canadian Pacific Ry.—Announcement was recently made that the C.P.R. Co. will redeem at once £7,191,500 of 5% mortgage bonds which fall due July 1, 1915. The redemption price is £102. Bondholders desiring to take advantage of the offer were asked to deposit their bonds, with Baring Bros. & Co., London, Eng., prior to June 29.

Grand Trunk Pacific Ry.—A meeting of shareholders is to be held at Montreal, July 16, to authorize an issue of $15,000,000 of debentures under the provisions of the G.T.P. Loan Act of 1913.

Intercolonial Ry.—It was stated in reply to a question in the House of Commons recently that the receipts of the I.R.C. for the year ended Mar. 31 amounted to $11,467,207.45, of which $3,438,447.32 was from passenger traffic and $8,028,760.13 from freight traffic.

Kingston and Pembroke Ry.—Application will be made to the Ontario courts to appoint a trustee in place of H. V. Rogers, deceased, in the matter of a mortgage of the K. and P. Ry., made Dec. 31, 1898.

Temiscouata Ry.—Gross earnings for March, $22,979.89; operating expenses, $15,751.04; net earnings, $7,228.85. Aggregate net earnings for nine months ended Mar. 31, $47,210.

It is anticipated that on account of the more favorable traffic returns for the year ended June 30, the directors will be enabled to pay a dividend of 1½ or 2% on the 5% income bonds, against 1% for the past five years.

Toronto, Hamilton and Buffalo Ry.—Following are the directors for the current year, elected at the annual meeting, June 3:—J. N. Beckley, President; Sir Thos. G. Shaughnessy, Vice President; W. C. Brown, W. H. Newman, H. B. Ledyard, D. McNicoll, W. K. Vanderbilt, Jr., Sir Edmund Osler, W. F. Torrance, W. L. Scott and D. W. Saunders.

White Pass and Yukon Route.—Aggregate earnings for four months ended Apr. 30, $134,805, against $81,439 for the same period 1912.

The introduction of heavy passenger equipment is rapidly doing away with both 4 and 6 wheel wooden frame trucks, their place being taken by cast steel and rivetted wrought steel frames, the reduced cost of maintenance amply justifying this change.

Canadian Pacific Railway Construction, Betterments, Etc.

Atlantic Division.—A contract is reported to have been let to H. Post, Woodstock, N. B., for the erection of new shops at McAdam, N.B., at an estimated cost of $100,000. The new buildings will be of concrete and steel, and will be built on a site partially occupied by other buildings, which are now being torn down, and the remaining part of the site cleared.

Eastern Division.—The new portion of the Windsor St. station, Montreal, was opened to the public, June 7. The entrance is from the corner of Windsor and St. Antoine streets.

It is expected that the alterations to the Place Viger hotel, Montreal, will be completed so as to permit of the addition being opened to the public early in July.

Press reports state that additions are to be built to the Angus shops, Montreal, at a cost of about $500,000. The additions will be made, it is stated to the passenger and freight car shops, the locomotive shop, upholstering shop, pattern storage building, maintenance building, general office building, and the power house building.

Campbellford, Lake Ontario and Western Ry.—We are advised that the contract for the erection of all the buildings on this railway between Glen Tay and Agincourt, Ont., has been let to the John S. Metcalf Co., Montreal. The buildings include seven brick stations, 12 wooden stations, nine 40,000 gall. water tanks; a 12-stall locomotive house with turntable, machine shop, coaling plant, ash pit, and sand house; nine freight sheds at Trenton, Ont.; seven station residences, 25 tool houses, and several miscellaneous buildings, making in all 85 structures. It is intended to have all these completed by the end of this year.

Ontario Division.—The Board of Railway Commissioners has approved location plan for an additional track from lot 23, station 4611.59, concession 3, Scarboro tp., mileage 87.34 to Leaside Jct., mileage 95.64, Havelock Division, and has approved of revised grade as built. This forms part of the second track between Toronto Union Station and Leaside Jct., which is being built in connection with the Campbellford, Lake Ontario and Western Ry.

Considerable progress has been made with with the grading for the second track from west of Islington to Guelph Jct. Most of the culverts have been put in and the piers for the larger structures are being built. None of the bridge structures are very large. It is expected that track laying will be started early in July.

Tillsonburg, Lake Erie and Pacific Ry.—The subsidy voted by the Dominion Parliament in 1912 for the building of a line from Ingersoll, northerly to a junction with the St. Marys and Western Ontario Ry., at Embro, Ont., 10.38 miles, has been revoked. The Minister of Railways stated that should this line not be built at once, there would be no further revote of the subsidy.

Lake Superior Division.—Work is reported to have been started on additions to the shops at North Bay, Ont. Among the buildings to be put up will be an erecting shop, with accommodation for the repair of ten locomotives; a car construction and repair shop; and an additional machine shop.

Manitoba Division.—It is expected that the new yards at North Transcona, east of Winnipeg, will be in full operation by Sept. 15. About 45 miles of tracks in the yards are being used. and on Sept. 15, an additional 47 miles will be ready for use. The cut-off connecting the west part of Winnipeg with the yard has been completed, with the exception of the bridge, the piers for which are being put in. The completion of this structure will enable the bringing of the grain traffic direct into the yard instead of hauling it through the city.

An agreement has been reached between the company and the Winnipeg City Council to remove the present subway at Main St., and to build a new one considerably wider and 6 ft. higher, the work to be done within two years.

It is expected that a start will be made at an early date on the alteration and enlargement of the passenger terminal facilities in Winnipeg. The improvements involve a 474 room addition to the Royal Alexandra Hotel, a six story office building to replace the present baggage and old express offices, extension to the waiting room and train shed, and other minor improvements. The estimated cost of the whole is $1,500,000. The contract has been let to Westinghouse, Church, Kerr and Co. S. J. Brunkerhoff is in charge of the work for the contractors.

The subsidy voted in 1908 for the building of a line from Gimli to Icelandic River, at Riverton, Man., 30 miles, has been revoked by the Dominion Parliament. This is an extension of the Selkirk and Winnipeg Beach Branch beyond Gimli.

Saskatchewan Division.—The Dominion Parliament has revoted the subsidy granted in 1908 for the building of 123 miles of railway from Moose Jaw, Sask., northwesterly. The Minister of Railways stated recently that the line had been built, but the subsidy had lapsed.

The Board of Railway Commissioners has authorized the opening of traffic of the branch from Kerrobert northeasterly from mileage 0 to 36.1.

Press reports states that plans are under consideration for the building of machine and repair shops at Wilkie, at an estimated cost of $180,000.

The Board of Railway Commissioners has authorized the building of a bridge over the South Saskatchewan River, on the branch northwesterly from Swift Current, subject to the conditions that a draw span be provided of such width as may be sanctioned by the Department of Public Works, which Department must also approve of the location of the bridge.

Alberta Central Ry.—The Dominion Parliament has regranted the subsidy voted in 1908 for the building of a line from Red Deer to Rocky Mountain House, Alta., 70 miles. The line is under contract, and a considerable amount of grading has been done.

Alberta Division.—The newly built line from Bassano to Irricana, was opened for traffic June 2.

The first passenger train to cross the new high level bridge over the Saskatchewan River at Edmonton left Strathcona June 2, and a regular train service was established into Edmonton June 15.

Calgary-Vancouver Second Track.—Contracts are reported to have been let for the following mileages of second track work:—Revelstoke to Taft, 24 miles; Westmore to Kamloops, 25 miles; Kamloops to Tranquille, 9 miles; the contractors being Grant Smith, McDonnell and Co., Pacific Building, Vancouver.

The Board of Railway Commissioners has authorized the opening of traffic of the second track completed between Mission Jct., and Hammond, B.C., 18.29 miles.

Winnipeg press dispatches, June 16, state that the contract for the building of the double track tunnel under the Selkirk Mountains, starting from near Bear Creek Station, has been let to Foley Brothers, Welch and Stewart.

Pacific Division.—The plans for the new C.P.R. line from Port Moody to North Vancouver, are under the consideration of the Board of Railway Commissioners. The route from Port Moody is around the head of the inlet and west, bridging the north arm and on through North and West Vancouver to Point Atkinson.

Considerable progress has been made with the new station and terminal buildings in Vancouver.

It is proposed to erect a $70,000 building at the False Creek yards, Vancouver, for the use of the sleeping and dining car department. (June, pg. 278.)

Intercolonial Railway Construction, Betterments, Etc.

The Dominion Parliament has voted the following sums in addition to those already mentioned in these columns on account of the Intercolonial Ry. new terminal facilities at Halifax, $2,500,000; second track from Chaudiere Jct. to St. Romauld, Que., $173,000; improvements at Levis, Que., $160,000; locomotive and car shops at Moncton, N.B., with equipment, $136,000; car ferry and dock at Mulgrave, N.S., $460,000; improvements at Point Tupper, N.S., $90,000; additional facilities at Riviere du Loup, Que., $28,000; surveys and inspections, $25,000; diversions at Sydney Mines, N. S., $40,000; increased accommodation and facilities at 19 points on line, and $25,000 for contingencies, $126,000; increased accommodation at Truro, N.S., $155,000; spur to Wallace Harbor, $69,500; to increase water supply $41,500.

Reference was made on pg. 264 of our June issue to the plans for the construction of new terminals at Halifax. The Department of Railways has under consideration tenders for grading a double track line from Rockingham to the site of the new terminals. The Minister of Railways paid a visit to the city June 16 to look into the project, and Jas. MacGregor, the engineer in charge, has been in consultation with the City Engineer, in connection with a number of matters. He is reported to have stated that the building of the line will be started early in July, and that the surplus material from the cuttings will be used in filling up the wharves etc., at the terminal site. $1,000,000 has been voted by the Dominion Parliament on account of the construction of a railway from Dartmouth via Musquodoboit Harbour and the Musquodoboit Valley to Dean's Settlement. The Minister of Railways stated recently that the line will be 73 miles long, and its estimated cost $28,545 a mile. It will be laid with 65 and 67 ft. rails taken up from the Intercolonial Ry. The $1,000,000 includes a revote of $600,000. The contract was originally let by the late Government. The present Government is not yet prepared to make any announcement as to the building of the proposed line to Guysboro, the original estimate for the construction of which was $68,000 a mile. (May, pg. 219.)

The Intercolonial Ry. has received the following additions to rolling stock:—19 box cars, 60,000 lbs. capacity, 218 box cars, 80,000 lbs. capacity, from the Canadian Car and Foundry Co.; 99 Hart convertible cars, from the Hart-Otis Car Co.; and 4 freight locomotives from the Canada Foundry Co.

Canadian Northern Railway, Construction, Betterments, Etc.

Canadian Northern Quebec Ry.—The Dominion Parliament has extended the time for the building of certain branch lines in Quebec.

Plans have been approved by the Board of Railway Commissioners for the erection of a new passenger and freight station at Maisonneuve, Montreal, to be situated on the south side of the track at the junction of Third and Fourth Avenues.

Land has been acquired in Hochelaga for the enlargement of the company's yards and the erection of new workshops. It was reported at the City Hall that the carrying out of the work would involve the closing of a number of streets. The matter is being looked into by the engineer and a committee of the council.

Canadian Northern Montreal Tunnel and Terminal Co.—It was reported by S. P. Brown, Chief Engineer in charge of the tunnel construction work, June 5, that 800 ft. of heading in solid rock had been cut in 31 days from the Dorchester St. end. The heading has now advanced 3,750 ft. west of Dorchester St., and very nearly equal progress has been made on the other heading. It is estimated that, if the same rate of progress is maintained the headings will be joined in September. About 3,600 ft. of the tunnel has been completed.

Canadian Northern Ontario Ry.—A proposition is reported to have been submitted suggesting that the C.N.O.R. join with the C.P.R. and the G.T.R. for the building of a joint four track line from a common point near Queen St. East at the Don River, Toronto, where a union station can be built, alongside the Don, to the union station tracks.

Plans have been filed showing the proposed entrance into Toronto from the west. They show a line four miles long, and include a tunnel of 2,360 ft. from east of St. Clarens Ave., just south of Davenport Road, to Talbot St. The tracks will be depressed at the west end, and the Humber will be crossed by a high level bridge. We have been officially advised that it is expected to start construction of this bridge by the end of June. In connection with the entry of the line into Hamilton, the Mayor has been advised that the company is willing to enter into an arrangement with the other companies for a common right of way through the city, and the Mayor has arranged for conferences with a view of ascertaining whether such a plan would be feasible. It is reported that the project to build from Beamsville direct to the Niagara River has been abandoned, and that a route terminating at Bridgeburg or Fort Erie will be chosen. A bridge will be built across the river and the line extended to Buffalo, so the reports state.

Montreal-Ottawa-Port Arthur Line.—The agreement between the company and the North Bay Town Council respecting the route of the line through the town was approved June 11, and the Mayor authorized to sign it.

Canadian Northern Ry.—It was reported in Winnipeg, June 15, that about 200 miles of line, principally in Saskatchewan and Alberta, were ready to be handed over to the operating department.

Station construction work is being gone on with on the branch lines. A considerable number have recently been completed, a recent list shows those finished to be:—Delisle extension, west of McRory, 8 miles; Swift Current extension from Avonlea, 11 miles; Prince Albert-Battleford branch, 6 miles; Melfort-Humboldt branch, 2 miles; Saskatoon-Calgary line from Excel, mileage 198, 8 miles; Vegreville-Calgary line, 10 miles.

Work is being pushed on the Vonda-Melfort branch in Sask., and on the Vegreville-Calgary line, Alta., so as to have them both ready for traffic after the harvest.

Canadian Northern Pacific Ry.—A. R. Mann, of the Northern Construction Co., is reported to have stated in Vancouver, June 5, that grading will be finished to the Albreda Summit, 430 miles west of Edmonton, by the end of October, and that track will be laid over the whole of the line in British Columbia by Aug. 1, 1914.

Working eastward from Port Mann track has been laid to Boston Bar, 116 miles, and a train service was put on as far as Spuzzum, 115 miles, June 16. An 11 span viaduct, 1,000 ft. long, is being built at Anderson Creek, a few miles further east, and other bridge work is being completed to Kamloops, to which point the grading has been finished. It is expected to have the track laid to Kamloops by the end of the year.

Ties are being delivered for the Lulu Island branch, and it was expected to start track laying by the end of June. (June, pg. 277.)

Canadian Northern Railway Tunnel in Toronto.

The new line which the Canadian Northern Ontario Ry. has projected from Toronto to the Niagara frontier, will negotiate the escarpment near the northwest corner of Toronto by a tunnel 2,360 ft. long. The line, from the proposed union station at North Toronto, will parallel the C.P.R. North Toronto line for about 3 miles, branching off northwesterly, the original survey locating the line to the south of the shoulder of land which the revised line will pass under.

The east portal to the tunnel will be at the corner of Davenport Rd. and St. Clarens Ave., alongside the Canada Foundry Co.'s plant, the tunnel emerging at the west portal a short distance south of St. Clair Ave., just west of the G.T.R. Toronto-North Bay line, the greatest depth over the tunnel being 40 ft. From this point westerly to the outskirts of Toronto, the tracks will be depressed in a 15 to 20 ft. cut, all the streets crossing overhead. This tunnel and depressed tracks will mean a big saving in what would otherwise be heavy property damages, and at the same time will eliminate all grade crossings.

The tunnel will be double tracked, probably of the same form as that now being used in the tunnel the C.N.R. interests are building under Mount Royal at Montreal. This construction is the twin tunnel type of horseshoe construction, with a dividing wall between, it having the advantage of a saving in material and a self induced ventilation.

In the vicinity of the tunnel, there will be three railway crossings to be provided for, but by the use of the tunnel, none of them will be at grade. The G.T.R. Toronto-North Bay line will be passed under just before coming out at the west portal. This will also be the case with the crossing of the parallel lines of the G.T.R. old main line, and the C.P.R. Windsor line a short distance west of the west portal.

The C.P.R. has opened a city freight and passenger office at 404 Victoria Ave., Fort William, Ont., in which the staff of the District and City Passenger Agent and of the District Freight Agent are located.

Burrard Inlet Tunnel and Bridge Company's Project.

The organization meeting of the company was held at Vancouver, June 5, the shareholders consisting of representatives of the district of Vancouver, city of Vancouver, North Vancouver, West Vancouver, and a number of individuals. The company was formally organized, and accounts for expenditures of $56,000 were approved. Following are the officers and directors: President, F. Carter-Cotton, representing West Vancouver; Vice President, Reeve May, representing North Vancouver; other directors:—Alderman F. E. Woodside, representing Vancouver city; Alderman G. W. Vance, representing North Vancouver Council; G. H. Bridgeman and — Loutet, representing the district of North Vancouver. The solicitors are Burns and Walkem, Vancouver, Pringle and Guthrie, Ottawa.

The Dominion Parliament has voted $350,000 towards the construction of the bridge proposed to be built across the Second Narrows of Burrard Inlet, Vancouver, B.C., in lieu of the subsidy granted in 1910. The subsidy was originally granted to the Vancouver, Westminster and Yukon Ry. The B.I.T. and B. Co. was merely a holding company representing the municipalities interested, which proposed to build the bridge with Provincial and Dominion aid.

The bridge, which is intended to cross the Second Narrows at an angle of 75 degrees to the average direction of the flood and ebb currents, is estimated to cost $2,225,000. It will have a clear headway of 45 ft., and will be 64 ft. 5½ in. wide, providing space for a single track steam railway, a roadway with double track for electric cars, and an eight foot sidewalk. It will be built on six piers. The three principal spans will have a total length of 1,045½ ft. Two of these will be fixed spans of 232 ft. each, and the central swing span will be 581½ ft. long, revolving at the centre and giving a clear navigable waterway on each side of 225 ft. (April, pg. 168.)

Dominion Government Internal Storage Elevators.

The Minister of Public Works recently announced that the Government had decided to erect two interior storage elevators, at Moose Jaw and Saskatoon, Sask., respectively, each to have a capacity of from 3,000,000 to 4,000,000 bush., and costing approximately $1,000,000. Similar elevators will be built in Alberta, and though the locations had not been decided on, the first will probably be at Calgary. In addition to these storage elevators, the Government has decided to build a transfer elevator on the Pacific coast, to be owned and operated by the Government, in connection with the anticipated growth of the grain export trade, after the opening of the Panama Canal. A Government owned terminal elevator of large capacity will also be built at Port Nelson, the Hudson Bay terminus of the projected Government railway from Pas, Man., to Hudson Bay. Supplementary estimates include $4,000,000 for this elevator construction, and orders have been given to the Grain Commission, under the supervision of which they will be built, to proceed at once with preparatory work in connection with those to be built at Moose Jaw and Saskatoon. The cities have offered free sites, and the Commission will proceed at once to select same. The elevators will be thoroughly modern, and will be equipped with full inspection and drying equipment.

National Transcontinental Railway Construction.

The Dominion Parliament, at its recent session, [illegible] on account of the construction of this railway from Moncton, N.B., to Winnipeg, Man. [illegible] completed. The amount expended on the [illegible] expected to have the track all laid, and the [illegible]

[illegible] the line in operation from Moncton to Winnipeg by the end of the summer of [illegible] formed, June 13, that the contract for the terminal station and the workshops at [illegible] submitted for signature as soon as ready. [illegible] to [illegible]

It is [illegible] sary to [illegible]

The first section of the journey is over the N.T.R. to Superior Jct. and the second over the G.T.P. [illegible] from Superior Jct. to Fort William. (June, pg. 277.)

Grand Trunk Pacific Railway Construction.

The Dominion Parliament has passed an act authorizing an advance from the Consolidated Fund [illegible] to assist the company in completing the line from Winnipeg to Prince Rupert; such advance to be repayable with 4% interest [illegible] the company's [illegible] of the Acts of 1906, and to be guaranteed by the G.T.R. The Act also provides that the [illegible] is in addition to any sums now remaining unborrowed and negotiable of the loans heretofore authorized.

The Minister of Finance, in explaining the proposals, said the object was to provide [illegible] proceeds of the funds already provided were insufficient. "The cost of construction of the prairie section up to April 30, as estimated by the chief engineer, was $35,438,230.31. To meet this estimated outlay there has been available, from the three sources mentioned, [illegible], leaving a balance of $4,700,821.10 on the prairie section, plus some additions for trestle work, $2,700,000; for additions including building additional elevator tracks and extending some of those already built, constructing new stations, section houses, tank houses, etc., of $3,600,000, making a total of $10,[illegible] required to complete the prairie section. [illegible] which will be exceeded according to the latest available estimates of the Chief Engineer, is [illegible]. Call this $70,000,000. Of this 25% is to be furnished by the G.T.P. This amounts to $17,500,000. The proceeds of the series B bonds were $9,000,000. This leaves a balance to be furnished from other sources—[illegible] $15,000,000—of $8,500,000. So, according to this estimate, an additional [illegible] is required to complete and fully equip the prairie section, and a balance of $8,000,000 to complete the mountain section, making a total of $18,000,000. This will be exceeded, so call it $20,000,000. We are providing $15,000,000, which will be available [illegible]"

[illegible] Vancouver May 22 from an inspection of the line easterly from Prince Rupert, B.C., and subsequently inspected the construction in progress westerly as far are Fort George. He reports that the grading easterly has been completed to Bulkeley Summit, and it [illegible] A considerable amount of grading has been done east of Bulkeley Summit towards Fort George, [illegible] track laid to that point by the end of the year. [illegible] last spike early in the summer of 1914, at a point between Fort George and Fraser Lake, B.C. (June, pg. 277.)

The Master Boiler Makers' Association's annual convention was held at Chicago, [illegible]

The Toronto Viaduct Proposition.

The Dominion Parliament has passed the Toronto Viaduct Act, which authorizes the G.T.R., the C.P.R., and the Toronto Harbor Commissioners, or any of them, in addition to their respective powers under the Railway Act, to expropriate for the purposes of the Toronto viaduct and works connected therewith or incidental thereto, any lands in Toronto covered by water within the district south of the existing C.P.R. right of way, from Yonge St. to the prolongation southerly of Berkeley St., and thence south of the G.T.R. right of way to Cherry St., and extending out to Windmill lane, and also a strip not exceeding 150 ft. wide immediately south of Windmill lane from the prolongation of Parliament St. to Cherry St.

The Minister of Railways in explaining the necessity for the passing of this act said the Board of Railway Commissioners' first order was for a four track viaduct, but it was found that this would not be sufficient for the traffic. The matter was reconsidered, and it was determined to build a six track viaduct. The act gives authority to the railways interested and the city of Toronto to expropriate between the existing tracks and the water. The Toronto Harbor Commissioners were in favor of the proposition in order to facilitate the development of the harbor.

Quebec Bridge Construction.

Three million dollars were voted by the Dominion Parliament at its recent session on account of the construction of the bridge across the St. Lawrence River at Cap Rouge, near Quebec. The Minister of Railways informed the House of Commons that up to the close of the construction season of 1912, there had been laid 63,792 cubic yards out of 105,000 cubic yards of masonry in the substructure. The north abutment and north outer pier are finished; south main pier about 50% done; north main pier about 75% done,; north anchor pier about 50% done; south anchor pier about 10% done. He expects that the work will be completed by the end of this year. In connection with the superstructure he said: The contractors have during the past year completed a new plant at Rockfield, Que., and they have turned out a large quantity of material. This plant has been in operation since the first of this year and about 1,500 tons of the members of the bridge have been fabricated, and part of the material has been sent to the bridge site. Steel for the false work, crane, etc., is being shipped to the site. Ten thousand tons of steel have been ordered from the mills at Pittsburgh, and of this, 6,200 tons have been delivered at the shops at Rockfield and 2,000 tons of the same have been manufactured. The contractors are putting in the concrete foundations for the false work for the approach span and for the crane runways on the north side, and are erecting false work on the south side. The steel for the anchorage has been completed. The crane [illegible] ready for operation. Regular shipments of steel to the site will be commenced shortly. The amount paid so far to the contractors for the superstructure is $471,[illegible]

Examinations in connection with the three scholarships covering four years' free tuition in the Faculty of Applied Science at McGill University, offered by the G.T.R. to apprentices and other employes under 21, and to sons of employes, were held during June.

Dominion Subsidies in Aid of Canadian Northern Railway Lines.

The Dominion Parliament has voted the following subsidies in aid of the building of the Canadian Northern Ry., and its allied lines:—To the Canadian Northern Ontario Ry., for a line from Toronto to Ottawa, Ont., 250 miles, at the rate of $6,400 a mile; for a line from Ottawa to Port Arthur, Ont., 910 miles, $12,000 a mile. To the Canadian Northern Alberta Ry., for a line from Edmonton to the boundary between Alberta and British Columbia, near the Yellowhead Pass, 260 miles, $12,000 a mile. The lines are to be completed within three years from Aug. 1, 1913; running powers and other traffic facilities are to be given to other railways under conditions to be fixed by the Board of Railway Commissioners, but such orders may be varied or rescinded by the Governor in Council; transportation is to be furnished to the government for governmental purposes at reasonable rates, and in payment of these charges the government is to be credited by the company with a sum equal to 3% on the amount of subsidy received up to $6,400 a mile; that books showing the cost of construction and cost of operation shall be produced when desired; that $7,000,000 of the common stock of the C.N.R. shall be transferred to the Government, which may be disposed of at the discretion of Parliament, such stock to be held in trust by the Minister of Finance and Receiver General.

The Minister of Railways, in explaining the reason for the granting of this aid, said the total amount was:—Ottawa to Port Arthur, 910 miles, at $12,000 a mile, $10,920,000; Edmonton to Yellowhead Pass, 260 miles, at $12,000 a mile, $3,120,000; Toronto to Ottawa, 250 miles, at $6,400 a mile, $1,600,000, a total of $15,640,000. The cost of the Toronto-Ottawa line was estimated at $41,131 a mile, and the subsidy was at the regular rate. The average cost of construction of the Ottawa-Port Arthur line was $49,381 a mile. The Dominion Government had already voted a guarantee of bonds for $35,000 a mile, but the company had only been able to dispose of its bonds at 90¾, which produced $31,760,000. The average cost of the Edmonton-Yellowhead Pass line was estimated at $38,500 a mile, in aid of which the Government had already guaranteed bonds, varying from $13,000 to $35,000 a mile, which bonds had produced on an average $22,400 a mile. The cost of these two lines was estimated at $54,638,981, and they had been financed to the amount of $34,578,220, leaving a deficiency of about $20,000,000, towards which the government proposed to grant $14,040,000. A comparison with the aid granted to the C.P.R. could not fairly be made, as that line was a pioneer line, but a comparison could fairly be made with the G.T. Pacific Ry. The saving to the G.T.P. Ry. by reason of the Government building the eastern section was estimated at $26,979,640, and the aid given in respect of the western section was by way of guaranteeing bonds for $62,187,000; by way of loan $10,000,000, implementing guarantee $13,000,000, interest on bonds for seven years $10,561,320. The aid given or proposed to be given to the C.N.R. was as follows:—

Guarantee of bonds—	
Montreal to Port Arthur	$ 8,060,000
Grand View to Edmonton	8,060,000
Edmonton to Yellowhead Pass	6,720,000
	$50,655,000
Cash subsidies—	
Ottawa to Hawkesbury	$ 367,872
Stanley to Fort Frances	1,355,326
Fort Frances to Rainy River	179,200
Yellowhead Pass to Vancouver	6,180,000
Cash subsidy under proposed legislation	14,040,000
	$22,122,398

No land grant had been given direct to the company, but it had through the purchase of other lines acquired with them land grants for 4,000,000 acres, of which 1,225,600 acres applies on its main line.

The Minister of Finance gave an exhaustive analysis of the financing of the company, which showed that the Dominion Government had guaranteed bonds in respect of the building of 2,552 miles of line, of which $57,992,268 had been issued, realizing $52,823,428. On the company's affiliated lines are bonds guaranteed by the Dominion Government amounting to $37,216,664; Ontario, $7,860,000; British Columbia, $16,490,000; Manitoba, $349,000; and there had also been issued $32,808,283 of bonds which were not guaranteed. The total amount of bonds guaranteed for the C.N.R. and its affiliated companies by the various governments amounted to $120,120,461, and of bonds not guaranteed $145,379,151, making the total amount of securities outstanding $265,499,612. The bonds guaranteed by the governments altogether were as follows:

Dominion of Canada	$58,043,250
Province of Manitoba	24,110,546
Province of Saskatchewan	8,030,000
Province of Alberta	5,586,665
Province of British Columbia	16,490,000
Province of Ontario	7,860,000

The mileages laid were:—Quebec to Montreal, 178; Hawkesbury to Ottawa, 57; Port Arthur to Edmonton, 1,265. There were under construction from Ottawa to Port Arthur 910 miles, from Edmonton to Yellowhead 260 miles, and from Yellowhead to Vancouver 525 miles; total, 1,695 miles. Contracts called for completion by the end of 1913, and by the summer of next year it was expected that the C.N.R. would be running across the continent.

The following figures were given, showing subsidies granted:—Ottawa to Hawkesbury, $367,000; Ottawa to Port Arthur, nothing; Stanley to Fort Frances, $1,355,000; Fort Frances to Rainy River, $179,000; Winnipeg to Summit, nothing; Montreal to Quebec, $1,927,000; Yellowhead to Vancouver, $6,180,000. The total of guarantees, Dominion and provincial, on the main line from Montreal to the Yellowhead Pass was $57,000,000, or about $20,000 a mile on the 2,700 miles.

Replying to questions in the House of Commons, June 2, the Minister of Railways said the maximum gradient against eastbound traffic between Port Arthur and Montreal, was 0.50%, or 26.4 ft. a mile, and that against westbound traffic on the same line 0.60%, or 31.68 ft. a mile; the maximum gradient against eastbound traffic on the line from Edmonton, Alta., to Port Mann, B.C., was 0.70%, or 37 ft. a mile; and that against westbound traffic on the same line was 0.50%, or 26.40 ft. a mile.

On June 4, the Minister stated in reply to further questions that the mileage under construction to be controlled and operated by the C.N.R., and not included in the answer given June 2, was 3,143 miles; the total amount guaranteed by the Dominion Government in aid of the construction of such lines was $43,419,585, and the amount granted to date for these lines was $6,180,000; the amount guaranteed by other governments for these lines had not been ascertained by the Department.

It is said that the subsidies will be paid over, so far as constructed lines are concerned, on the completion of inspections which are now being made, and on the remaining mileages as the work progresses.

Six wheel trucks, rivetted wrought steel frames, M.C.B. standard axles, parts and pedestals, and 36 in. wrought steel wheels, have been advocated for exclusive use in steel passenger car truck design.

Dominion Government Railway to Hudson Bay.

The Dominion Parliament at its recent session voted $4,500,000 for the construction of this railway, and the provision of terminals. The Minister of Railways stated that the contracts as let, together with the estimated cost are:—Pas to Thicket Portage, 185 miles, $2,500,000; Thicket Portage to Split Lake Jct., $1,000,000; from Split Lake Jct. to Port Nelson on Hudson Bay, $1,000,000. About $1,500,000 of the vote is on account of harbor work. It is expected to send a number of men with supplies and a complete plant to Hudson Bay to start the development of the harbor there. It is proposed to put a wireless station at Port Nelson and another at Pas. The latter will be removed elsewhere when the land telegraph lines are completed. The bridge across the Saskatchewan River at Pas was only finished at the end of April; tracklaying has been commenced north of the river, but he had not received any report as to the progress made. Grading has been completed for over 100 miles, and it is hoped to get track laid on the 185 miles to Thicket Portage by the end of the year. (June, pg. 273.)

Grand Trunk Railway Betterments, Construction, Etc.

Granite Ballasting Montreal-Toronto Line.—The project for the reballasting of the line between Montreal and Toronto, with crushed granite, has apparently been dropped for the present. The rock crushing plant which had been provided has been put in storage at Kingston, Ont., and the preparations which were being made for installing it at Kingston Mills have been stopped.

Union Station at the Don, Toronto.—A proposition is reported to be under consideration for the building of a union station, to be used by the G.T.R., the C.P.R., and the Canadian Northern Ontario Ry., on the west side of the Don River, just north of Queen St. East, Toronto. The G.T.R. and the C.P.R. now have stations at the Don, within sight of each other, and the Canadian Northern is preparing to build its eastern entrance. The suggestion is that the present stations be abandoned, and that the three lines join up at a certain point and build a four track line to Toronto Union Station.

Erie, London and Tillsonburg Ry.—A revote of the subsidy granted in 1910 for the building of a railway from Port Burwell to London, passing through, Vienna, Calton, Aylmer, Kingsmill and Belmont, Ont., 35 miles, has been granted by the Dominion Parliament. The charter for the building of this railway is held in the interests of the G.T.R. The Minister of Railways said recently he would support a motion to refuse any further renewal of the subsidy for this line. (June, pg. 276.)

Upwards of 1,500 responses were received by the New York, New Haven and Hartford Rd. in reply to a reward offered by that line for the invention of a practicable automatic train control device, following the fatal Westfort wreck last fall. A special force had to be set to consider the large number of devices submitted, but of these, it is said that less than 5% were worthy of consideration, and after final examination by the higher engineering officials, only two were deemed worth a trial.

Telegraph, Telephone and Cable Matters.

The Nova Scotia Legislature has amended the act of incorporation of the Maritime Telegraph and Telephone Co.

The Department of Naval Service received tenders, June 25, for the erection of masts and buildings for wireless telegraph stations to be built at Kingston, Toronto and Port Burwell.

It is reported that the Western Union Telegraph Co. is contemplating the erection of a large station at Bay Roberts, Nfld., and that its station at Canso, N.S., will be ultimately abandoned in favor of Bay Roberts.

The Great North Western Telegraph Co. has opened offices at Ste. Felicite, Que., and Listowel station, Ont., has reopened its offices at Beaumaris and Grimsby Beach, Ont., and has closed its offices at Demorestville and Listowel, Ont.

The Board of Railway Commissioners has extended to Dec. 1, the time limited by Sec. 4, chap. 61, 7-8 Ed. VII., for approval of C.P.R. telegraph tolls between points in Western Canada, including Sudbury, Ont., and from points east thereof, and east of and including Windsor, Ont., during which it may charge such tolls as are authorized under that act.

The United States Forest Service is conducting experiments in the use of wireless telegraphy and wireless telephones as a practical means of communication between fire patrol men and the headquarters office. Quick communication means the arrival of fire fighters in the early stages of a fire. This in turn means that many fires will be extinguished in their incipiency, with only nominal loss.

The Board of Railway Commissioners has ordered that when the City of Hamilton, Ont., has provided underground conduits, in accordance with plans prepared by the City and approved by the Board's Electrical Engineer, the Great North Western Telegraph Co., C.P.R. Telegraphs and Bell Telephone Co. shall remove their poles, wires and cables from portions of certain streets there.

In an interview on the question of telegraph extensions by the C.P.R. during the current season, J. McMillan, Superintendent of Telegraphs, Manitoba Division, C.P.R., Winnipeg, is reported to have stated that about 4,775 miles of wire will be strung along the western lines, and that by the end of the summer, it is expected that about 2,280 miles of C.P.R. track west of Winnipeg will be operated by telephone.

The Dominion Government has awarded a contract to the Marconi Wireless Telegraph Co., for the erection of two stations, one at Pas, Man., and the other at Port Nelson, on Hudson Bay, in connection with the projected Hudson Bay railway. It is stated that the stations will be of 10 k.w. capacity, obtained from 20 h.p. Canadian Fairbanks-Morse engines, and that each station will have a range of 500 miles.

F. D. Boomer, whose appointment as local manager, Great North Western Telegraph Co., Quebec, was announced in our last issue, entered the company's service in April, 1902, at Adams, N.Y., and in Jan., 1902, was in charge of the Postal Telegraph Co.'s office at Alexandria Bay, N.Y., being transferred to Ogdensburg, N.Y., Sept., 1903. From Sept., 1904, to May, 1906, he was all night manager at Watertown, N.Y., and re-entered G.N.W.T. Co.'s service, May, 1906, at Toronto, being appointed traffic inspector in Oct., 1910, and chief operator at Ottawa, June, 1911.

A bill is before the Newfoundland Legislature providing for the confirmation of the agreement between the Government and the Marconi Wireless Telegraph Co. of Canada, for the operation of wireless telegraph stations at certain points in Newfoundland and Labrador. Stations have been erected at Battle Harbor, Venison Tickle, Seal Island, Domino, Grady, Indian Harbor, Cape Harrison and Mokkovik, and further stations are provided for under the agreement. The Government pays a subsidy of £100 on each of the stations, with an additional £50, a year for certain of them.

Among the Express Companies.

The Canadian Northern Ex. Co. has opened its offices at Lake Joseph and Royal Muskoka for the summer season.

The Dominion Ex. Co. has moved its Edmonton, Alta., office, to its new building on Jasper Ave.

The Board of Railway Commissioners has defined delivery and collection limits, for Dominion Ex. Co., in Gull Lake, Sask.

The American Ex. Co. has resumed its service to St. John, N.B., operating over the Eastern Steamship Co.'s International Division.

The Dominion Ex. Co. has placed its service in effect on the Canada and Gulf Terminal Ry., between Ste. Flavie and Matane, Que., and has opened offices at Priceville, St. Ulric, Sandy Bay, Metis Beach and Matane.

The Board of Railway Commissioners has extended the express delivery and collection limits in Winnipeg, to include the portion of Elmwood, from the corner of Chambers and Watt Sts., along Watt St. to Union Ave., and thence on Union Ave., to C.P.R.

Dominion Express Co.'s Appointments.

L. D. CHURCHILL has been appointed cashier at Halifax, N.S., vice J. Doherty, transferred.

J. DOHERTY, heretofore cashier at Halifax, N.S., has been appointed cashier at St. John, N.B., vice W. E. Campbell.

W. E. CAMPBELL, heretofore cashier, has been appointed chief clerk, St. John, N.B.

P. T. DONNELLY, heretofore messenger, has been appointed agent at Levis, Que.

F. H. McGARRETT, heretofore agent at Cobalt, Ont., has been appointed route agent, North Bay, Ont., vice D. F. Martin.

A. ROBERTS, heretofore agent at South Porcupine, Ont., has been appointed agent at Cobalt, Ont., vice F. H. McGarrett, transferred.

J. McLAY, heretofore agent at Kenora, Ont., has been appointed agent at Maple Creek, Sask.

Reduction of Express Rates in Western Canada.

In Canadian Railway and Marine World for May, it was announced that the Board of Railway Commissioners had ordered a 20% reduction of express rates in the Prairie Provinces and British Columbia. Following is the official order (General order 104, Apr. 30.):—

In pusuance of the powers conferred upon it by secs. 28 and 348 of the Railway Act, and of all other powers possessed by the Board in that behalf its is ordered:—

1. That the express companies under the Board's jurisdiction be required to submit new standard tariffs of maximum mileage rates to be charged for express freight classified as merchandise between points west of and including Sudbury, Ont., making a reduction of approximately 20% from the maximum mileage rates in excess of 50c. per 100 lbs. now being charged; the said reduced maximum rates to carry with them the appropriate tolls of the graduate table, scales K and N, and the special tariff for single shipments of 500 lbs. or over;

2. That the said maximum rates, so reduced, for the mileage group from 900 to 1,000 miles, do not exceed $4 per 100 lbs. in the section between Sudbury, and Sault Ste. Marie, Ont., and Crowsnest, Canmore, and Thornton, Alta., and $4.75 per 100 lbs. in the section west thereof, in place of $5 and $6, respectively, as now charged;

3. That the said reduced standard tariffs of maximum mileage rates be published and filed so as to become effective on or before July 15, 1913.

Parcel Post Legislation in Canada.

While the Postmaster General's bill for the establishment of a parcel post system in Canada was under discussion in the Commons recently, he said that it had been decided to fix the weight limit of parcels at 11 lbs. and the maximum length and girth combined at 6 ft. The zone system will be adopted, each province forming a zone, with the exception of the three maritime provinces, which will form a zone together. The first zone, however, will be within a radius of 20 miles of the point where the parcel was posted, irrespective of the provincial boundary; the second zone will be outside the 20 mile radius, and within the provincial boundary. It is anticipated that the system will come into force, by proclamation, Jan. 1, 1914.

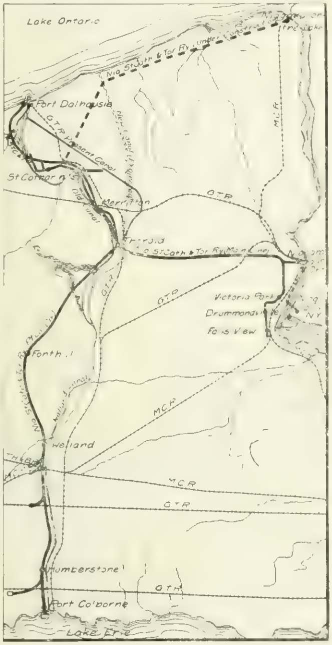
South East Calgary Corporation.—This company, owning about 4,000 acres of land in the neighborhood of the C.P.R. Ogden Shops, near Calgary, Alta., has built about 6 miles of railway track through its land, south east of the Ogden Shops, connecting with the Calgary Municipal Ry. at the city boundary. The line was built under the supervision of T. H. McCauley, Superintendent, Calgary Municipal Ry., and is fully equipped and quite up to date. One car has been received, which it was expected to place in operation, July 1. The fares for the six miles are at the same rate as those in the city, workmen's tickets 8 for 25c., and ordinary 6 for 25c., single fares 5c. Jas. Walker, D. W. Trotter and P. Burns, Calgary, are among those chiefly interested. We are advised that the line will be operated by the city of Calgary.

The Use of the Screw Spike for fastening down rails, is increasing in popularity. The principal objections to its use are that the first cost, and the difficulty of laying the rails and making repairs and renewals are increased; but it is felt by those using them that these disadvantages are more than offset by the increased life of the tie, decreased cost of maintenance, and the greater strength and stability of the track. From the fact that at each relaying they are driven in new holes for security, the old holes loosening in time, ordinary spikes cause the tie to become what is termed "spike killed," that is, the tie no longer will effectively hold the spike. It is for this reason that some roads that use tie treating, only have the process carried far enough to give a preservation corresponding to the mechanical life of the tie. The increased mechanical life from the use of the screw spike makes advisable more complete initial preservation.

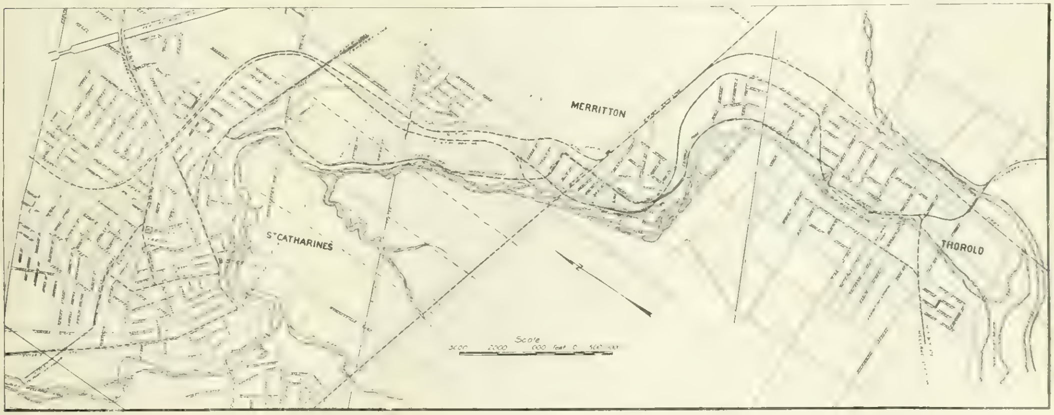
Electric Railway Department.

The Niagara, St. Catharines and Toronto Railway System.

The Niagara, St. Catharines and Toronto Ry. operates a system of electric lines covering a considerable portion of the central Niagara peninsula in Ontario, following principally the portion of the country traversed by the Welland Canal, and covering throughout its length a rich manufacturing district that is increasing in value yearly through the influx of new industries attracted by the close proximity of the cheap Niagara power, the abundance of the labor market and the excellent shipping facilities. At the different towns served, there has been a marked influx of branches of U. S. industries coming into the Canadian field, the establishment of such branches having been rendered necessary on account of the Canadian protective tariff.



Niagara, St. Catharines and Toronto Ry. Lines, Radiating from St. Catharines, Ont.



Niagara, St. Catharines and Toronto Ry. Local Lines in St. Catharines, Merritton and Thorold.

The Niagara, St. Catharines and Toronto Ry's present system consisted originally of three separate lines. The early history of these lines is typical of that of most organizations that have been formed from the amalgamation of several minor lines that to a certain degree have a community of central interests. The main line was the St. Catharines and Niagara Central Ry., a line chartered by the Ontario Legislature in 1881, to build a steam line from St. Catharines to the Niagara River, this privilege being extended by another Act in 1882, authorizing the company to extend the line to Toronto via Hamilton. No action was taken at that time, but application was made to the Dominion Parliament to have the work declared to be for the general advantage of Canada, which was granted in 1887. Construction was pushed forward, and a line was completed from St. Catharines to Niagara Falls and opened for traffic, Dec. 20, 1888. In 1890, the Dominion Parliament reserved the right to extend the line to Hamilton and Burlington, and in 1891 increased financial power was granted, with authority to make physical connection with any railway other than the G. T. R., for transfer to and from New York State. Operation was continued under these conditions until, by Dominion legislation in 1895, the name was changed to the Niagara, Hamilton and Pacific Ry. Co., and authority given to extend the line to several points westerly as far as Woodstock and Port Dover. Shortly after, the line fell into a receiver's hands, but was eventually reorganized, and electrification was authorized by the Dominion Parliament in 1899. By this Act, the company was reorganized and the name changed to that which it at present holds—The Niagara, St. Catharines and Toronto Ry. Co. Power was given it to acquire, by absorption or control of stock, the older company. The new company was given power to extend its lines in several directions, including to Toronto, via Hamilton, to Port Dalhousie, and to Fort Erie. Wide powers of operation were granted, including the acquisition of vessels for operation on the Niagara River and Lake Ontario to Toronto and points west. Further Dominion legislation within the next three years, to be mentioned later, permitted the acquisition of the other two lines now comprised in the system.

The smallest unit of the system is the Niagara Falls, Wesley Park and Clifton Tramway Co., Ltd., incorporated by Ontario letters patent, Aug. 7, 1886, to construct a tramway through certain streets of Niagara Falls and Stamford township, to be operated by any power desired. This line was built shortly after, operated at first as a horse car line, and then electrified, being sold under permission of Ontario legislation of 1901, to the Niagara, St. Catharines and Toronto Ry. Co., the latter company being permitted to acquire this line under Dominion legislation of 1901.

The earliest line of the system was the St. Catharines Street Ry. Co., incorporated by Ontario legislation in 1874, to operate a horse car line, with the option of sleighs in winter, in St. Catharines, Port Dalhousie, Merritton, Thorold, and Grantham township. No immediate action being taken under this charter, the time for construction was extended by the Legislature in 1877, following which the line was built from St. Catharines through Merritton to Thorold, and operated as a horse car line. In 1882 the Ontario Legislature changed the name of the company to the St. Catharines, Merritton and Thorold Street Ry. Co., and the operation continued as before, until in 1893 the name of the company was changed by letters patent to the Port Dalhousie, St. Catharines and Thorold Electric St. Ry. Co., but under this renewed charter, which granted the privilege of extending the line to Port Dalhousie from St. Catharines, no action was taken, the line operating as before. In 1902 the Ontario Legislature authorized the company to transfer its holdings to the Niagara, St. Catharines and Toronto Ry. Co., the latter being permitted to take over the property by Dominion legislation of 1901, and the same company was given authority to absorb the two smaller companies.

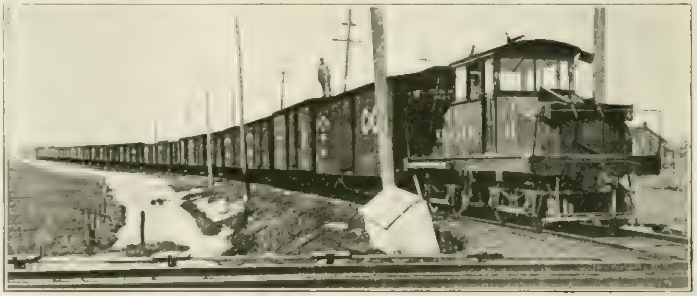
St. Catharines Yards of the N. St. C. & T. Ry., with Shops in Background.

From 1901 the history of the main company is the history of the subsidiary companies, the present of the companies absorption on this date of the amalgamation of interests. Shortly after the absorption, the Niagara, St. Catharines and Toronto Navigation Co. was formed, and the Dominion Parliament in 1902 granted the Niagara, St. Catharines and Toronto Ry. Co. authority to acquire the navigation company's stocks and bonds, which it immediately proceeded to execute.

As mentioned, the main line of the company from St. Catharines to Niagara Falls was originally steam operated, and in the nineties fell into evil days and was placed in the hands of a receiver, who operated it for a number of years. In 1899, the insolvent line was taken over by a New York syndicate, associated with which were four Canadians, Z. A. Lash, J. H. Plummer, J. W. Flavelle and Aemilius Jarvis, of Toronto. F. A. Cheney was appointed General Manager by the new interests, and the electrification of the line was proceeded with at once. In 1900 E. F. Seixas was appointed General Manager, which position he still holds. In the same year the line was first operated by electricity. In 1905, [illegible] interests of the company were bought out by F. Nicholls and E. R. Wood. of Toronto, the former becoming President. In 1908 the Mackenzie Mann Co. interests acquired control, D. B. Hanna, Third Vice President, Canadian Northern Ry., becoming President.

Welland Station on Niagara, St. Catharines and Toronto Ry.

Prior to its absorption the Niagara Falls, Wesley Park and Clifton Tramway had been operated as an electric line. The original line of this unit operated from Bridge St., Niagara Falls, Ont., through the town streets and out beyond Lundy's Lane, paralleling the Niagara River, some distance back from the river road. Immediately after absorption, the new interests had the line extended a short distance beyond Lundy's Lane, into Falls View, the high land immediately above the Falls. This gave a total length of 4.35 miles, which has not been extended since.


Train of 37 Cars on Niagara, St. Catharines and Toronto Ry.

The main line from Niagara Falls, Ont., to St. Catharines was originally 11 miles long. Immediately after the absorption of the subsidiary lines in 1901, this was increased by extending the line through St. Catharines to Port Dalhousie, in order to connect with the subsidiary Niagara, St. Catharines and Toronto Navigation Co., two boats for which, the Lakeside and Garden City, had been purchased by that company the same year the line was extended. The boat line was changed in 1910 by the replacing of the Lakeside by the new steamboat Dalhousie City.

The Port Dalhousie, St. Catharines and Thorold Electric Street Ry. line through St. Catharines, Merritton and Thorold, is the same at present under the N. St. C. & T. R. Co. as before the absorption.

The company's lines were extended in 1907 from the main line at Thorold to Welland, and in 1908 from the latter point to Port Colborne, both lines being built under authority of Dominion legislation passed in 1906, which authorized several extensions, including one now under construction from St. Catharines to Niagara on the Lake.

The company's main line leaves the radial station on St. Paul St., opposite Mary St., in St. Catharines, following James and Raymond Sts. and Welland Ave. to the G.T.R. Port Dalhousie branch tracks, from which point it turns easterly over its own right of way, paralleling the G.T.R. very closely all the way to Merritton, and thence to Thorold, the general direction and location of the line being that of the original canal on the high land to the east. Merritton is situated on a low area, and as the line has passed up a steady grade coming out of St. Catharines, a drop into Merritton is avoided by constructing the line at higher elevation than the ground through that town, part of the way on an embankment, but the greater part on a timber trestle over half a mile long, the line through this portion following an ascending grade, negotiating the height of land which is reached beyond Thorold. This ridge is is over 350 ft. above Lake Ontario, from which the line rises through St. Catharines, the principal portion of the rise being between St. Catharines and Thorold. From Thorold, the line runs almost due east, crossing the present Welland Canal on a swing bridge, following an almost straight route for Niagara Falls. From the outskirts of St. Catharines to the outskirts of Niagara Falls, the line is exclusively on its own right of way. Entering Niagara Falls at the north west corner of the city, the line follows the highway, going into the city over the tracks of the subsidiary company, the Niagara Falls, Wesley Park and Clifton Tramway Co., terminating at the foot of Bridge St. For the heavy summer tourist traffic, arrangements have been made with the International Ry. whereby the N., St. C. & T. Ry. cars run over its line from the foot of Bridge St., along the river bank to the upper steel bridge across the river near the Falls, crossing that bridge, and thence a short distance to the terminal station of the International Ry., in the heart of Niagara Falls, N.Y., landing through passenger without change.

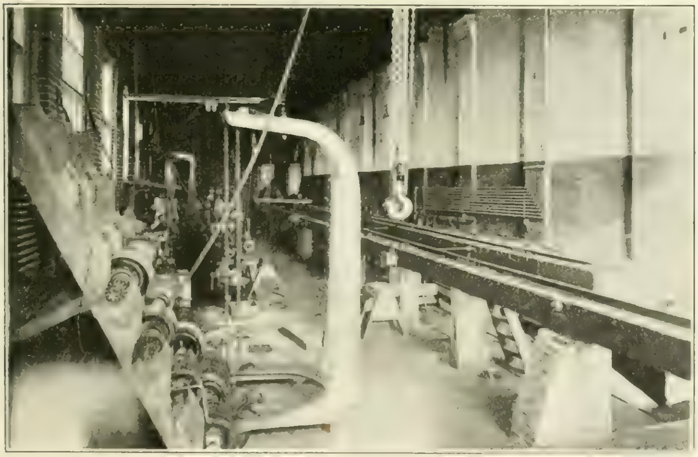
The company's Port Dalhousie branch leaves the St. Catharines station over the same lines as the main line, but instead of turning off at Raymond St., proceeds to Lake St. and Louisa St., leaving the west end of the latter street for its own right of way along the sides of the steep east bank of the old Welland Canal. Crossing the canal on a swing bridge, the line goes through the centre of Port Dalhousie to the Navigation Co.'s wharf, where connection is made with the Port Dalhousie-Toronto boats. Between Toronto and Niagara Falls, by way of St. Catharines, there has developed a considerable traffic, particularly in the tourist season. To accommodate this, there is a through service over the company's lines from Port Dalhousie to Niagara Falls, N.Y. From the Port Dalhousie branch to the main line, in the outskirts of St. Catharines, there is a cut off along Louisa St. for diverting this through traffic from the centre of the town, practically skirting the border of the city. The normal service over the Port Dalhousie branch is from the St. Catharines station to Port Dalhousie, this through service only being used to connect with the steamboats in the tourist season.

In St. Catharines, there is a purely local service, operating from the city park, at the south end of St. Paul St., the main thoroughfare of the city, through the business section, and out Queenston St. to the cemetery, located on the banks of the present Welland Canal, a total distance of about 2 miles, cars operating every 40 minutes.

The Merritton and Thorold division also operates a local service through a portion of St. Catharines, serving principally the manufacturing sections of these three places. The western terminus is at the McKinnon factory at the extreme west end of the city, near the point where the Port Dalhousie branch drops down the canal bank, crossing this line a few hundred feet from the end. Following Ontario and St. Paul Sts., it passes the terminal station, and then runs on Queenston St. to the Thorold Road, following the latter along the bank of the old canal through Merritton into Thorold, terminating at the main line station near the centre of the town, the main line crossing this line at three points en route. Thus the company has a rapid transit line over its own right of way from St. Catharines to Thorold, with a local line between the same points, following the canal bank closely, serving the numerous industries that are clustered along that old waterway. The local line thus acts as a feeder for the main line drawing from this rich district.

The company's new line southerly through Welland to Port Colborne leaves the main line a short distance south of Thorold station, branching off directly west, passing over the old Welland Canal on a swing bridge. All the way from the junction point to Port Colborne, the line runs on its own right of way, with very light grades. All over the system the gradients are very light, with the exception of the maximum 2% grade on a portion of the main line ascending the mountain at Thorold. This new line passes through Fonthill, and then on to Welland, cutting through the westerly fringe of that town. South from there, the line passes through Humberstone, and thence to Port Colborne.

E. F. Seixas,
General Manager, Niagara, St. Catharines and Toronto Ry.



Interior of N., St. C. & T. Ry. Repair Shop at St. Catharines.

The latest extension of the company is to Niagara on the Lake, which is under construction, and is expected to be completed this year. This extension leaves the main line in St. Catharines at the corner of [illegible] and Welland Ave., proceeding up [illegible] crossing the present canal, running [illegible] on it own right of way after leaving the city, until it reaches the Lake Shore Road at the mouth of Ten Mile Creek, where the proposed Welland ship canal is to be entered from Lake Ontario. For about half the remaining distance from this point to Niagara on the Lake, the line will run on the highway allowance, running across country the remaining distance on its own right of way south of the military reservation, going into Niagara on the Lake parallel to the M.C.R. tracks along King St., with the terminus at Queen St. The total length of this extension will be about 13 miles. The construction will be similar to that on the main line, using 80 lb. rails, 4|0 grooved trolley wire, and 35 ft. cedar poles. The maximum gradient will be 0.25%, with a minimum curvature of 500 ft. radius.

In general, the system is operated very much the same as a steam railway, with a train dispatcher located at Merritton, the most central point of the system. Telephone train dispatching is employed. At the principal points there are well appointed stations for both freight and passenger service, in charge of each of which is an agent. These stations are St. Catharines, Port Dalhousie, Merritton, Thorold, Niagara Falls, Fonthill, Welland, Humberstone and Port Colborne.

Freight is one of the principal items of revenue on this line, just as on a steam road. Along the company's lines are 60 industrial sidings, aggregating about 15 miles of track. All the freight is handled in trains, hauled by electric locomotives, and it is no uncommon sight to see trains of as many as 40 cars. In order not to interfere with the heavy passenger schedules, none of which are less than hourly each way during the daytime, the freight is handled as much as possible by night. In St. Catharines, where some of the sidings are from the local line, night handling of freight is required by law. In addition to the freight business the Dominion Express Co. operates over the company's lines. The freight business is so heavy that at St. Catharines there are 6 drays owned by the company in constant service. At other points on the system, the cartage is handled under contract. The St. Catharines freight terminals are quite extensive, and the traffic is so heavy that they are greatly overtaxed. In most particulars they resemble steam road freight terminals. Located where the Port Dalhousie cutoff strikes the main line near the outskirts of the city, the cutoff has been found a most useful adjunct for handling the through freight. On one side of the main line at these terminals is a platform shed, arranged in the conventional manner. On the other side of the main line are fairly extensive yards for an electric line, where trains are made up, and similar work performed.

The rolling stock equipment consists of the following:—50 interurban and local passenger cars, 7 electric locomotives, 3 snow ploughs (1 rotary and 2 push), 30 box cars, 30 gondolas, 16 flats, 1 derrick car, and 2 cabooses. The interurban passenger cars are of the double truck type, 50 ft. long, the majority closed, but several open for summer traffic. Each of these cars has a separate baggage compartment for handling passengers' luggage as expeditiously as a steam road. This is checked through to destination in the usual manner. The freight equipment is limited, but is all that

[illegible]

[illegible] The freight increase is even more marked, reaching 344,656 tons in 1912. The line is particularly well situated for the [illegible] in elevation of 326 ft., most of this rise occurring at or near Thorold, the centre of a heavy manufacturing district along the old canal. The extremely hilly nature of [illegible] of the numerous factories to each other along the canal, makes it very difficult for steam lines to run in sidings, they being [illegible] for their lines than are essential for electric operation.

Power for the operation of the line is received from the Electrical Development Co. of Ontario at the generated pressure of 12,000 volts, and is transmitted to trans-

[illegible] N., St. C. & T. Ry. at Welland.

[illegible] 700 k.w., Thorold 1,000 k.w., St. Catharines 1,000 k.w., and Welland 500 kw. At all of these stations are rotary converters delivering power to the line at 600 volts d.c.

Over the whole system, the overhead work is of 4/0 copper wire. The main lines are laid throughout with 80 lb. rails, with 60 lb. on the local lines. The main and [illegible] a total of 70 miles of rail line. The steam- [illegible]

[illegible] Carey.

Dogs on British Columbia Electric Ry.— [illegible] rected conductors to strictly enforce its rule [illegible] of the owner, and then controlled so as [illegible] be strictly enforced.

The Tramway Situation in Montreal.

The report of G. Jarvis, City Engineer, on the tramway situation in Montreal, presented to the Board of Control, June 6, is a lengthy document, based on information collected by Mr. McLeod, of the city engineering staff, and the reports of a number of "experts," [illegible] engaged by various interests to make suggestions for the improvement of the service. Mr. Jarvis states that the overcrowding on all lines and at all hours has been found to be the rule and not the exception. He approves of the laying of car tracks on Dorchester St. between Guy St. and Beaver Hall Hill in order to facilitate the operation of the Guy-Beaver Hall line; the division of the Windsor-St. Lawrence line into two sections each returning from Place d'Armes Square; the making of Victoria Square the turning point for several lines by the installation of new tracks, and the relieving of the congestion on the lines by Point St. Charles, by a line from Wellington St., via Charlebois St., Center St. and Atwater Ave. [illegible] St. Other recommendations [illegible] the following: the elimination of all unnecessary stops; the placing [illegible] at every important [illegible] point; that passengers should always have their fares ready; that larger and clearer [illegible] that the congestion on the rear end of cars be stopped; [illegible] more closely supervised; that delays at [illegible] the short turning of cars at the option of [illegible] the car lines.

[illegible] a special committee was appointed to act with the Board of Control in making a careful study of the report, and to report [illegible] with the least possible delay.

The Board of Control, which has been in consultation with E. A. Robert, President, M.T. Co., agreed on a report, June 17, to be presented to the City Council for adoption at the next meeting. The report recommends 15 new routes, the elimination of [illegible] improved switching and the modification of a number of existing routes.

Electric Railway Finance, Meetings, Etc.

British Columbia Electric Ry. Gross earnings for April [illegible] operating expenses $367,044; net operating expenses $198,250; renewal funds $51,620; net earnings [illegible] operating expenses; $173,923 net operating earnings; $37,935 renewal funds; $135,988 [illegible] from investments; $160,988 net income, for [illegible] ings, for same period 1911-12.

Calgary Municipal Ry.—[illegible] City Commissioners are putting the rail- [illegible] pended on extensions and improvements of the lines.

Cape Breton Electric Co. Gross earnings for April, $27,916.65; operating expenses and taxes $15,857.77; net operating earnings, $12,058.88; interest charges $4,891.67; balance $7,167.21; sinking and improvement funds $1,190; net balance $5,977.21, against $26,558.86 gross earnings; $16,064 operating expenses and taxes; $10,494.86 net operating earnings; $4,495.83 interest charges; $5,999.03 balance; $1,206.67 sinking and improvement funds; $4,792.36 net balance for April, 1912. The construction charges during April were $2,498.29.

Grand Valley Railway.—By an arrangement made June 18, the action of the Brantford City Council against the company has been adjourned until September, the company agreeing in the meantime to pay, by July 1, $5,000 on account of taxes in arrears, and $2,500 additional, by Sept. 1. The city is making application for forfeiture of the company's charter on the ground of failure to live up to its terms and conditions.

Montreal Tramways Co.—The first call of 10% upon the new stock issued April 15, became due and payable June 20.

Toronto Ry., Toronto and York Radial Ry., and allied companies.—Gross earnings for April $760,676; operating expenses, maintenance, etc., $397,875; net earnings $362,801, against $658,174 gross earnings; $296,286 operating expenses, maintenance, etc.; $361,888 net earnings, for Apr., 1912. Aggregate gross earnings for four months ended Apr. 30, $3,028,408; net earnings $1,446,107, against $2,622,724 aggregate gross earnings; $1,345,987 net earnings for same period 1912.

The Toronto Ry. receipts for May were $510,767.20 and the percentage paid to the city was $102,153.84, against $446,371 and $89,274.20 respectively for May, 1912.

Winnipeg Electric Ry. Gross earnings for April, $323,563; operating expenses $174,465; net earnings $149,098, against $292,037 gross earnings; $152,938 operating expenses; $139,099 net earnings, for Apr., 1912. Aggregate gross earnings for four months ended Apr. 30, $1,324,509; net earnings $582,669, against $1,209,557 aggregate gross earnings; $554,437 net earnings for same period 1912

Moose Jaw Electric Railway Company's Report.

The report for the year ended Dec. 31, 1912, shows receipts of $77,996, and passengers carried, 1,607,770. The earnings showed a steady monthly increase, and it is anticipated that this will continue through this year. There are nine miles of track in use, and 12 cars. During this year a further seven or eight miles of track will be laid, and ten cars have been ordered from the Ottawa Car Co., two of which have been received. The company has acquired a pleasure park site just outside the city, to enhance receipts from pleasure traffic. Power is generated by oil engines, the first in Canada to be used for this purpose. There are 200 h.p. units, and an additional unit of 500 h.p. is being installed.

The assets consist of property, plant and equipment, $570,128; accounts receivable, $2,239; total, $572,367; and liabilities of $557,008, leaving a balance to profit and loss of $15,359. The stock was put on a 6% dividend basis in the early part of the year.

Following are the officers and directors: President, A. A. Dion; Vice President, N. J. Lowe; Secretary-Treasurer, D. R. Street; other directors, P. B. Mellon; D. O'Connor, Jr., T. F. Ahearn, E. J. Daly, C. E. Armstrong and A. H. Dion.

Canadian Electric Railway Association's Annual Meeting.

The annual meeting held at Hamilton, Ont., May 28, 29 and 30 was in every way the most successful in the Association's history, and the attendance was larger than at any previous meeting, member companies from the Atlantic coast to the Pacific coast being represented, including officials from the St. John Ry., St. John, N.B., on the east, and from the British Columbia Electric Ry. on the west. The chair was occupied by the President, Patrick Dubee, Secretary-Treasurer, Montreal Tramways Co.

After routine business four new companies were admitted to membership, viz.: Pictou County Electric Co., Stellarton, N.S.; Sherbrooke Ry. & Power Co., Sherbrooke, Que.; Montreal & Southern Counties Ry. Co., Montreal, and Moose Jaw Electric Ry. Co., Moose Jaw, Sask.

The Secretary-Treasurer, Acton Burrows, Managing Director, Canadian Railway and Marine World, presented an exhaustive report on the Association's work during the year, dealing with a number of important topics. The report was considered, section by section, and elicited some valuable discussions, decisive action being taken on a number of matters vitally affecting electric railway interests.

A special committee which had been appointed to consolidate and revise the constitution and bylaws presented a report which was adopted. The most important alteration recommended and approved was the changing of the name from Canadian Street Railway Association to Canadian Electric Railway Association.

A number of important papers were read, including the following:—

Application of standard code of train rules on electric interurban railways.

The property serving a population of twenty thousand or less.

Electric railway track construction.

The relations of a surgeon to a traction or railway company.

Electric railway switch work.

Some problems of interurban railway operation in Canada.

Modern tendencies in railway control.

Accident claims.

Adjudication of claims arising from industrial accidents.

Underground cables.

Hydraulic power vs. steam power.

Freight and express traffic on suburban and interurban railways.

Results of test operation of new types of cars and description of new standard city cars on the British Columbia Electric Ry.

The renewal of trolleys with steel wire.

Training of employes.

The work order system as applied to electric railway accounting.

These papers, which are copyrighted by the Association, will be printed in the official proceedings and distributed to officials of member companies. They were very fully discussed and the opinions elicited will form a most valuable symposium on the important subjects dealt with.

On the election of officers being taken up, the Vice President, C. B. King, Manager London St. Ry., proposed the re-election of Patrick Dubee as President and paid a warm tribute to his energetic discharge of the duties. This was carried amid applause, Mr. King being unanimously re-elected Vice-President.

Acton Burrows was unanimously re-elected Secretary-Treasurer for the seventh consecutive year.

The following were elected as the executive committee: Hon. [illegible] Ry.; E. P. Coleman, General Manager, Dominion Power & Transmission Co.; A. Eastman, General Manager, Windsor, Essex & Lake Shore Rapid Ry.; J. D. Fraser, Director and Secretary-Treasurer, Ottawa Electric Ry.; H. M. Hopper, General Manager St. John Ry.; Wilson Phillips, Superintendent, Winnipeg Electric Ry. The President, Vice President and Secretary-Treasurer are ex-officio members of the executive committee.

Aubrey Acton Burrows, Secretary and Business Manager, Canadian Railway and Marine World, was unanimously re-elected Assistant Secretary.

The representatives attending the meeting were taken by special train over the Dominion Power & Transmission Co.'s Hamilton and Brantford line, which proved a most enjoyable trip, the roadbed and track being in excellent shape and the scenery very attractive. Opportunities were also afforded for inspecting other portions of the company's system. E. P. Coleman, the General Manager, who had charge of the local arrangements, was most assiduous in his attentions, his efforts being heartily supported by other officials of the company.

Patrick Dubee,
Secretary-Treasurer, Montreal Tramways Co., and President, Canadian Electric Railway Association.

One of the interesting features was the inspection of a number of the important manufacturing industries in Hamilton, which are producing goods used by electric railways. Visits were paid to Canadian Westinghouse Co.; Steel Co. of Canada; Standard Underground Cable Co. and National Steel Car Co., a considerable time being spent at each plant, thoroughly viewing the different processes of manufacture.

As a most enjoyable wind up to the proceedings the Dominion Power and Transmission Co. gave a dinner at the Hamilton Club, which was attended by the officials of member companies and by a number of other invited guests. E. P. Coleman occupied the chair, and among the [illegible] of Dominion Power & Transmission Co.; Patrick Dubee, President, and C. B. King, Vice President of the Association; [illegible] Vice President and Manager, [illegible] Montreal Tramways Co., the [illegible] being Burrows.

British Columbia Electric Railway Co's. Social Features.

The employes of the British Columbia Electric Railway Company take great interest in the development of the social side of the company, and the management is assisting in this movement, as it has been found that a social gathering of this kind works to the best interest of the service. During the past month the B.C.E.R. Social Club held a ladies' night and conversazione in its Vancouver quarters. It was attended by over 200 members of the club and their lady friends. General Manager Sperling and all the chief officials of the Company were present and took an active part in the programme. At Victoria the office staff gave a dance at the Alexandra Club, which was attended by over 200 members of the staff and their friends. In the Delta district the employes of the Company organized and gave a dance at Ladner, which was the chief social event of the season in the district. The management is paying attention to providing for the pleasure of its employes during the outdoor season. The company recently acquired 10 acres of land in the suburbs of Vancouver and plans to utilize it for the present as recreation grounds for its employes. This year one acre will be cleared, lawn tennis courts laid out, and a club house erected. The clearing work will be continued next year and continued until the grounds are available for all forms of outdoor sport.

Transportation of Postmen by Electric Railways.

Canadian Railway and Marine World for April contained, on pg. 189 full particulars of the bill introduced in the House of Commons by the Postmaster General to confer on himself and his successors in office the power to decide the rate to be paid electric railway companies for the transportation of postmen, respecting which strong representations were made by a deputation from the Canadian Street Railway Association. The Association's Secretary-Treasurer continued to watch the measure, paying several subsequent visits to Ottawa for that purpose and [illegible]. On May 31 the Postmaster General announced in the Commons that he had decided to withdraw the bill for the then current session at least. In the course of the discussion he stated that he had made a contract with the Toronto Ry. Co. recently to carry postmen and special delivery messengers for four years at $12,000 a year. There being 355 postmen and special delivery messengers that averages $[illegible] per head per year which average will be reduced as the number of men employed increases, the amount to be paid annually being stationary. In answer to questions he stated that a contract had been made with the Montreal Tramways Co. for a year at $[illegible] a man. The Quebec Railway Light and Power Co. is being paid $42.50 a man, and the Ottawa Electric Ry. is being paid $[illegible] a man.

Electric Railway Projects, Construction, Betterments, Etc.

Bell Island Transportation Co.—The Newfoundland Legislature has passed an act for the encouragement of the construction of tramways at Bell Island. The Bell Island Transportation Co., which is registered under the Companies Act of 1899, is authorized to build inclined and other power tramways there for freight and passenger traffic, being given an exclusive franchise for 50 years under certain conditions, the Government guaranteeing 5% dividend on the capital expenditure, up to $2,000 a year, or $40,000 in 20 years; $1,000 a year for 20 years after the completion of a wharf, and $100 a year for 20 years for the conveyance of mails from the wharf up the inclined railway. Construction is to be completed within three years. The company's franchise is not to interfere with the rights of the Nova Scotia Steel Co., the Dominion Iron and Steel Co., or other mine owners to building tramways from their mines to their shipping piers.

Berlin and Waterloo St. Ry.—A bylaw has been passed by the ratepayers of Berlin, Ont., authorizing the city council to expend $30,000 to build a second track from Wellington St. to the Waterloo boundary line during this year. (Nov., 1912, pg. 575.)

The Berlin, Waterloo, Wellesley and Lake Huron Ry. Co. has deposited with the Secretary of State at Ottawa an indenture setting forth that the line of the Galt, Preston and Hespeler St. Ry. has been conveyed to it. The G.P. and H. St. Ry. is a local line operated in conjunction with the C.P.R. and the B.W.W. and L.H. Ry., which is controlled in the interests of the C.P.R., and has power to build a number of lines in the district indicated by the names of towns in the title. (July, 1909, pg. 491, and G.P. & H. Ry., July, 1912, pg. 367.)

Brandon Municipal Ry.—While the first car was run over the recently completed municipally owned electric railway, May 16, the regular service was not inaugurated until June 2. Superintendent Antonisen is in charge of the lines. (June, pg. 286.)

British Columbia Electric Ry.—Work was started, May 30, on the construction of the Hastings St. line in North Burnaby, B.C. It will be two miles long, and it is expected to be in operation by the end of the summer. The new line to Kerrisdale, starting from Tenth Ave. and Crown St., was opened for traffic, June 2. The company has informed the Vancouver city council that it cannot undertake the extension of the proposed line on Broadway west from Alma Road this year.

The contract for the erection of a 700ft. double track treatle at the south end of Granville St. bridge, Vancouver, calls for the use of 1,000,000 ft. of lumber. The trestle is to be used in connection with the station to be built for the Lulu Island branch. The contract for the erection of a wharf at Port Moody, will require 200,000 ft. of lumber and the driving of 300 piles. W. G. Gilley is contractor for both works. (June, pg. 286.)

Burrard Westminster Boundary Ry. and Navigation Co.—The Dominion Parliament has extended the time within which the company may build its authorized lines. (June, pg. 286.)

The Cape Breton Electric Co.'s management has authorized the expenditure of a considerable sum upon improvements of its lines in and around Sydney and Glace Bay, N.S., the work to be done this year and during 1914. Among the more important are the building of an addition to the Sydney car barn, the construction of a second track on Townsend St., and the putting in of additional turnouts so as to establish a 15 minute service on the Pier line.

Conception Bay Electric Co.—The Newfoundland Legislature has incorporated a company with this title having power among other things to build electric railways connecting Brigus, Cupids, Clarke's Beach, Port de Grave, Bay Roberts, Spaniards' Bay, and other towns and villages adjacent thereto. W. H. Jarret, Clarke's Beach, Nfld., and Rev. G. H. Field, Brigus, Nfld., are among the incorporators.

Dominion Power and Transmission Co.—The charter of the Brantford and Hamilton Ry., owned by this company, has been amended by the Dominion Government, so as to give power to build a branch from near Lynden to Galt, Ont. We were officially advised recently that preliminary surveys for this line had been made, but nothing has been definitely decided as to construction. E. P. Coleman, Hamilton, Ont., General Manager. (June, pg. 286.)

The D.P. & T. Co., we are officially advised, is considering the advisability of installing a steam plant of considerable size in Hamilton, not as an auxiliary, but for continuous operation as an extension of its power producing capacity. The plant, incidentally, will aid in dealing with frazile ice troubles at the DeCew Falls generating station, but this trouble is so slight that it would not warrant the installation of a steam plant for the sole purpose of dealing with it. No decision has been arrived at as to size of the plant, or when it is going to be installed. (June, pg. 286.)

The Dominion Ry. and Plaster Co. owns plaster deposits on Bras d'Or Lakes and Gilbert Lake in Cape Breton, N.S.; and has a charter to build an electric railway from these properties to Sydney. It is said that negotiations are being carried on with the Cape Breton Electric Co., and with the Sydney city council, with a view of arranging for the building of the line. Up to the present, however, nothing definite has been arrived at. The officers and directors are:—President, A. B. McCormack; Vice President, T. Cozzolino; Secretary, J. P. Joy; other directors:—J. C. Mathers, F. deYoung, all of Sydney, N.S.

Edmonton, Stoney Plain and Wabamun Ry.—Press reports state that arrangements are being completed for the building of the proposed railway from Edmonton, via Stoney Plain to Wabamun, Alta., 40 miles. E. S. McQuoid, Edmonton, Alta., is reported to be interested.

Grouse Mountain Scenic and Incline Ry.—An extension of time to Dec. 31 has been granted to the company by the British Columbia Government to make certain expenditures on surveys, plans, etc., which the regulations provided should have been done by June 30. (Nov., 1911, pg. 1071.

Imperial Traction Co.—The Dominion Parliament has extended the time within which the already authorized lines may be built, and has given the company power to build the following additional lines:—From Smithville, in Lincoln County, to Bridgeburg, Welland County; and from Hamilton to Toronto. (Dec., 1912, pg. 622.) .

The Levis County Ry. has been extended to Gareau bridge, a few minutes walk from the site of the south approach to the Quebec Bridge, where a picnic park has been laid out. (July, 1912, pg. 367.)

London St. Ry.—The directors made an inspection recently of the new track work in course of construction, and the new plant which is being added to the power equipment. The work is expected to be fully completed by July 31.

The city council had before it, May 31, a report of the City Engineer, recommending that the company be asked to build some extensions of lines. (June, pg. 286.)

Lunenburg Electric Ry.—The Nova Scotia Legislature has extended the time within which the company may build the lines authorized by chap. 133 of the statutes of 1911.

Manitoba Radial Ry.—The Dominion Parliament has extended the time within which the company may build the lines authorized to be built by chap. 105 of the statutes of 1907. (Mar., pg. 141.)

Medicine Hat, Alta.—The ratepayers decided recently by a vote of 974 to 131 to grant a franchise to the Montreal Engineering Co. for the building of an electric railway in the city. A summary of the franchise agreement was given in our June issue, pg. 285.

Montreal and Southern Counties Ry.—The Board of Railway Commissioners has authorized the company to open for traffic its line from the Country Club branch through Greenfield Park to the Central Vermont Ry., St. Antoine de Longueuil, Que., 2.25 miles. From this point the C.V.R. is being electrified to Richelieu, 15 miles, and it is expected that this section will be opened for traffic shortly. The electrification of the C.V.R. from Richelieu to St. Cesaire, 15 miles, is expected to be completed this year. Surveys have been made for a line from St. Cesaire to Granby, 16 miles, but it is not expected that any construction will be gone on with this year. (June, pg. 286.)

Montreal Tramways Co.—Montreal papers, in discussing the tramway situation in that city, state that the company's plans involve the practical reconstruction of the system within the next two or three years. The standard to be maintained in all new work will be 116 lb. rails, with 132 lb. guard rails, with 7 ft. instead of 6 ft. ties, laid more closely than heretofore, and on a concrete roadbed 21 inches thick. The work will be done gradually, and it is stated that already nearly 1,500 men are engaged on it. Track has already been laid on Notre Dame St., and work is now in progress on St. James St. from McGill St. to St. Lambert Hill; on St. Catherine St., and on Bleury St., from St. Catherine St. to Sherbrooke St. (June, pg. 286.)

Moose Jaw Electric Ry.—A contract is reported to have been signed for the building of a line passing through Boulevard Heights and Parkdale Boulevard, at a cost of $50,000. It will open up a considerable area of building land, the owners of which are providing the funds for building the extension. It is said that the line will be built this year. (Dec., 1912, pg. 622.)

Morrisburg and Ottawa Electric Ry.—A contract is reported to have been let to the Reliance Construction Co., Chicago, Ill., for the building of an electric railway from Ottawa to Morrisburg, Ont. (May, pg. 235.)

Nipissing Central Ry.—The Dominion Parliament has extended the time within which the lines authorized by chap. 112, statutes of 1911, as amended by chap. 135, statutes of 1912, may be built.

Track laying was started June 11 on the extension to Armstrong St., Liskeard, Ont., and it is expected to have the whole work completed early in July. (June, pg. 286.)

Ontario Hydro-Electric Power Commission's Proposed Electric Railways. Resolutions have been passed by the Whitby, Ont., town council, asking the Commission to submit an estimate of the cost of constructing an electric railway from Toronto with terminals at Uxbridge, Port Perry and Whitby. The Barrie, Ont., town council has passed a resolution asking the Commission to submit an estimate for the building of an electric railway from Barrie to a junction with the C.P.R. Toronto-Sudbury line. The Civic Utilities Committee of Kingston, Ont., has asked the Commission to submit an estimate of the cost of building a line from Kingston to Cornwall. The act under which this construction may be done was given in full in our May issue, pg. 234.

Ottawa and St. Lawrence Electric Ry.—We are officially advised that plans and profiles have been prepared for the section of this projected railway from Ottawa to Morrisburg, Ont., and from a point on this line to Russell, 55 miles. This mileage is ready to be put under contract, and it is expected that it will be let at an early date. The company is applying to the municipalities through which the line will pass to grant subsidies in aid of construction. (June, pg. 286.)

Ottawa, Rideau Lakes and Kingston Electric Ry.—Press reports state that financial arrangements for the construction of this projected railway are being made. It will be 125 miles long, from Ottawa to Kingston, passing through Smiths Falls, with a branch to Perth and Lanark. The maximum gradient is 0.7%. N. M. Clougher, Ottawa, is President. (May, pg. 235.)

Regina Municipal Ry.—Recent information states that the extensions of the electric railway in Regina, Sask., will be completed by Aug. 31. They include lines to the R.N.W.M.P. barracks, the Canadian Northern Ry. shops, the Grand Trunk Pacific Ry., the country club, and the sewage disposal works. Seven gangs of men and 440 teams are employed. H. Doughty is Superintendent. (June, pg. 286.)

St. Thomas Electric Ry.—At a meeting of the St. Thomas, Ont., city council, June 3, a bylaw was prepared for submission to the ratepayers to authorize the expenditure of $17,500 on the laying of a second track on Talbot St. (April, pg. 185.)

Saskatoon Municipal Ry.—The ratepayers recently passed a bylaw authorizing the expenditure of $100,000 upon the extension of the railway. (June, pg. 289.)

Stratford Ry.—It is said that arrangements have been completed for the immediate starting of construction of the lines proposed to be built in Stratford, Ont. A. Waddell, Stratford, is President, and J. E. Rothery, of Mackenzie, Mann and Co.'s staff, Toronto, is Manager. (May, pg. 236.)

Toronto Suburban Ry.—We are officially advised that at the end of May 90% of the grading on the eight mile extension from Weston to Woodbridge, Ont., had been done, and that the remaining grading was well forward. Tracklaying has been started, and it is expected to have the line finished early in July. Nothing definite has been decided as to the construction of the new line on a private right of way from Weston into Toronto, reference to the filing of the plans for which was made in our May issue, pg. 236.

The work in progress on the line to Guelph starts at the Senate Hotel, Dundas Road, runs into Lambton Park, crossing Humber River, and Mimico Creek, thence northerly and under the C.P.R. tracks to Dundas St., which is crossed at Islington. The route follows Dundas St., on the north side to the Etobicoke River, where it crosses to the south side, and gradually approaches the C.P.R., which is followed closely to Cooksville station, thence the line swings northward to Meadowvale, crossing the Credit River there through Churchville or Huttonville, where it gets out of the Credit River valley, passing near Norval, through Georgetown and Limehouse on the south side of the G.T.R. to Acton, through that village, and on in a direct line through Eden Mills to Guelph, where there will be a station on Dundas Road. The line will be 46.25 miles long. It is intended to extend the line from Guelph, crossing the Speed River at the old grist mill, and on by a fairly direct route to Berlin. The G.T.R. line to Harrisburg will be crossed, and there will be two crossings of the Grand River. No surveys have yet been made for any extension beyond Berlin.

The contract for the construction of the line from Lambton to Guelph is being carried out by Ewen Mackenzie, who has sublet portions of the work. The grading is more than 50% completed, and good progress is being made with the bridge work. Tracklaying was expected to be started by June 20, at Cooksville, the gangs working east and west. It is hoped to have the line completed in the fall. (June, pg. 287.)

Vancouver Hydro-Electric and Tramway Co.—We are advised that M. Yates, 511 Union Bank Building, Victoria, is the trustee for the company. The bylaw which has been approved by Ladysmith city council, granting a franchise to the company, provides for the building of an electric tramway system on such streets as may be agreed upon, the first lines to be completed within twelve months after the signing of the agreement. Regulations governing the operation of the lines are made, and it is provided that the city council may acquire the line at the expiration of 25 years, at a price to be agreed upon, and if the purchase is not then made the franchise is to be extended for five years, when the option to purchase may again be exercised. The company is to be exempt from taxation for ten years. (May, pg. 236.)

Winnipeg Electric Ry.—Wilford Phillips, Manager, recently announced that the company proposes laying about 14 miles of steel this year, which includes second track on existing lines, and some extensions. The St. Mary's road extension will be completed this summer to two miles south of the border of the St. Vital municipality. The Academy Road-Godfrey Ave. line will be extended to Ash St., and the Arlington St. line from William Ave. to Logan Ave. (June, pg. 287.)

An arrangement is said to have been practically concluded by which the company will start work immediately on the building of a line from the present terminus of the Park Lane line, along the Pembina highway, through the municipality of Fort Garry.

Port Arthur and Fort William Electric Railway Rolling Stock.

The joint commission operating the Port Arthur and Fort William Electric Ry. has ordered four double truck and five single truck p.a.y.e. cars from the Ottawa Car Co. The whole cars will be of all steel underframe construction with monitor roof, similar to those recently put into service by the Ottawa Electric Ry. Following are the chief details:—

Double truck:—Length over buffers, 45 ft. 3 ins.; length over bulkheads, 33¼ ft.; length of front vestibule, outside, 4½ ft.; length of rear vestibule, outside, 6½ ft.; width of belt rails, 8 ½ft.; seating capacity, 42 trucks, 27-G-1; motors, Westinghouse 101-B; air brakes, Westinghouse [illegible]; life guards; arc headlights; standard rattan upholstered seats.

Single truck:—Length over bulkheads, 21 ft.; length over buffers, [illegible] ft.; length of vestibule, 4 ft. 6 ins.; width of belt rails, 8 ft. 2 ins.; seating capacity, 32; motors, Westinghouse 101-B; air brakes, Westinghouse, S-M-1; electric heaters; life guards; arc headlights; standard upholstered rattan seats.

Regina Municipal Railway Notes.

Referring to the information on this subject, published in Canadian Railway and Marine World for June, pg. 1913, H. Doughty, Superintendent, writes: "The mention that wages are paid on the basis of 10 hours a day is somewhat misleading. On the old rates 10 hours a day was paid, but on the new scale, effective April 1 last, only 9½ hours a day is given."

A Regina correspondent writes:—"The city council has gone on record in favor of Sunday street cars. The matter will have to be referred to the people, a two third vote being required. There seems little doubt that before long the cars will be in operation on Sundays, as the council did not take action without an agitation having been first worked up in favor of Sunday operation.

"There is a possibility that workmen's special tickets will be done away with, as it is believed that but few avail themselves of the opportunity this cheap fare affords them of going home to dinner.

The consent of the Board of Railway Commissioner, to ten new crossings of steam railway lines is necessary before the city can carry out its programme of street railway construction."

Dominion Power and Transmission Company's Railway Lines.

In the comprehensive article in Canadian Railway and Marine World for June, dealing with the above lines, a paragraph covering the Bartonville section of the Hamilton Radial Ry. was omitted. It is now given, as follows:

The Hamilton Radial Electric Ry. also operates a short line from the southern terminus of the King East and Barton line of the city service, from the corner of Sherman Ave. and Main St., along the highway to Bartonville. This is single track, with a return trip distance of 2¼ miles. One single truck car operates on this line, carrying all the service, which, to this small suburb, is quite light. Between the city lines and this line, there is a transfer ticket arrangement. Between the lines of the Hamilton Street Ry., Hamilton, Grimsby and Beamsville Ry., and this Bartonville section of the Hamilton Radial Electric Ry., there is no physical connection, although the three lines come together at the corner of Sherman Ave. and Main St.

Port Arthur and Fort William Electric Ry.—Material for the construction of the new car lines in Fort William, Ont., has been delivered, and construction was started June 2. (April, pg. 185.)

Quebec Rapid Transit Co.—The Dominion Parliament has extended the time within which the company may build its authorized lines. (Nov., 1912, pg. 605.)

Three Rivers Tramway Co.—A second call of 10% on the subscribed capital has been made. R. Bournival, City Hall, Three Rivers, Que., is Secretary-Treasurer. (May, 1912, pg. 252.)

The Proposed Acquisition of the Toronto Railway by the City.

Following on the legislation obtained by the City of Toronto at the recent session of the Ontario Legislature, to enable it to negotiate for the acquirement of the Toronto Ry., a series of conferences have been held between the President, Sir William Mackenzie, and Mayor Hocken, to arrive at a basis of agreement on which the necessary bylaw may be prepared for submission to the ratepayers. In an interview, June 16, Mayor Hocken is reported to have said that he had suggested that the city might give $21,000,000 for the Toronto Ry., and all the electric railway lines in the city owned by the company, including the franchises of all portions of the Toronto and York Radial Ry. and the Toronto Suburban Ry., which are within the city limits, as at present defined. As it has been laid down by the company that only an offer which includes the purchase of the Toronto Electric Light Co. will be considered, the Mayor also stated that the city would probably pay $7,500,000 for all the assets and franchise of that company, making $29,000,000 for the two properties and all their assets. These figures are approximately on the basis of 160 for the Toronto Ry. shares, and 135 for Toronto Electric Light. It is understood that by acquiring these properties the city would also take over the unexpired contracts of the companies with the Electrical Development Co. of Canada for the supply of power for about seven and eight years respectively.

At a subsequent meeting of the Board of Control, an appropriation of $10,000 was made to obtain the services of experts for a valuation of the physical assets of the companies, and R. A. Ross, Montreal; B. J. Arnold, Chicago; and J. W. Moyes, Toronto, were agreed upon to investigate and report.

Before the matter can be finally decided upon, in addition to being submitted to the company's shareholders for ratification, it will have to be approved by the Ontario Hydro Electric Commission, and then voted on by the qualified ratepayers.

Full details of the capitalization of the companies concerned, and their relations with other companies of the local electrical group, were given in Canadian Railway and Marine World for May, page 238.

Personal Paragraphs.

BERT GREENWAY, until recently connected with the Brandon Municipal Ry., is now on the Regina Municipal Ry.'s staff.

T. STOTHERS has been appointed trustee for the three municipalities which have guaranteed the bonds of the Ontario West Shore Ry.

A. G. PERRY, Local Manager, British Columbia Electric Ry., North Vancouver, B.C., returned, June 1, from a holiday trip to England.

T. AHEARN, President, and **J. D. FRASER**, Director and Secretary Treasurer, Ottawa Electric Ry., left Ottawa, June 23, for a six weeks' trip in Europe.

G. W. WILSON has been appointed Treasurer of the International Railway Co., Buffalo, N.Y., vice N. P. Baker, resigned, who has gone to West Virginia to enter private business with his two sons.

R. A. SHAW, ticket agent, British Columbia Electric Ry., Vancouver, died suddenly on the street on his way to church, June 1. He was formerly in the Great Northern Ry. service at Langdon, N.D.

Electric Railway Notes.

The Brandon Municipal Ry. was officially opened for traffic, June 2.

The Halifax Electric Tramway Co. is reported to be in the market for six closed street cars.

The City of Calgary, Alta., is reported to be in the market for six cars for its municipal railway service.

The Montreal Tramways Co. has received three steel street car bodies, from Canadian Car and Foundry Co.

The Edmonton Radial Ry. has received six single end, double truck, semi convertible city cars, from Preston Car and Coach Co.

The Montreal Board of Control has decided not to oppose the granting of permission to the Montreal Tramways Co. to haul freight during this summer.

The Grand Valley Ry. started the operation of its cars between Paris and Galt, Ont., by power supplied by the Hydro-Electric Power Commission, June 2.

The Cape Breton Electric Co. has authorized the purchase of some new cars for its lines in Sydney, N.S., and the purchase of an additional ferry steamboat.

The Ottawa Electric Ry. has ordered two double truck locomotive type snow sweepers from the Ottawa Car Co., for delivery in November.

The British Columbia Electric Ry. has ordered three single truck snow sweepers, similar to those supplied last year, from the Ottawa Car Co., for delivery in November.

The Board of Railway Commissioners has approved the Hull Electric Co.'s standard mileage freight tariff for all distances to and including 15 miles.

The Halifax Electric Tramway Co. has agreed to take back those of its employes who were engaged in the recent strike for increased pay. The company's offer of 21, 22 and 23c. an hour, according to length of service, was accepted.

The Ottawa Electric Ry. has decided to change the color of the exterior of its cars from maroon to dark green. The 20 new cars about to be put into use will be green, and the present cars will be repainted the new color when they go into the shops to be repaired.

A press report states that two of the cars which the Calgary Municipal Ry. is having built by the Preston Car and Coach Co., will be of the stepless type, and that the company is negotiating with the patentees in the U. S., for the securing of the Canadian rights.

A meeting of property owners at Fort William, Ont., recently, decided to petition the city council asking for an extension of the municipal electric railway on Victoria Ave. westward to the city limits, thence south on Neebing Ave. to Montreal St., where connection would be made with the present line, thus practically forming a belt line.

The Regina Municipal Ry. has received, from Preston Car and Coach Co., 8 double truck, and 3 single truck, p.a.y.e. Five of the double truck cars are equipped with G. E. 80 motors, and 3 are equipped with Westinghouse 101 B2 motors, as are the 3 single truck cars, all quadruple equipment, and all the cars have Westinghouse air brakes D. E. G. 1 compressors.

The Winnipeg Electric Ry. operates its cars over its subsidiary line, the Winnipeg, Selkirk and Lake Winnipeg Ry., on Sundays as far as Parkdale. It was expected that arrangements would be completed for extending their operation through the municipality of St. Andrews, starting on June 22. The people of Selkirk are petitioning to have the operation of the cars on Sundays extended into that town.

The City of Regina, Sask., is building at its municipal railway shops, one motor haulage and four flat cars. The haulage car will have 27G 1 double trucks, 16 ft. centre to centre, 4½ ft. wheel base, 32 ft. long over all, Canadian General Electric Co.'s G.E. 80 A motor equipment and Westinghouse air brakes; the flat cars will have F.E. single trucks, 8 ft. wheel base, 26 ft. long over all, reversible hand brakes and Ohio Brass Co.'s Tomlinson couplers.

The Port Arthur and Fort William Electric Ry. service has been in full operation during the past month, the strike of the employes having collapsed. The railway is owned by the two municipalities, and is operated by a joint commission, and an agreement as to rates of pay, etc., had still some time to run, when the men demanded increased pay, and when that was refused, they struck work. Outside assistance was brought in, and a partial service was given for some time, but as the public generally opposed the strike, it soon collapsed.

The British Columbia Electric Ry., in conjunction with the New Westminster Progress Club, has arranged a series of excursion trips between Vancouver and New Westminster, for the season. Special cars will leave Vancouver at 1 p.m. daily for New Westminster, where parties, after spending a short time in the city, will embark on a steamboat for a trip down the Fraser River to Steveston, returning over the Lulu Island line to Vancouver, which will be reached about 5 p.m.

The Manitoba Public Utilities Commission has issued an order, taking effect July 1, under which the Winnipeg Electric Ry. Co. is directed to carry passengers on the lines to a point in Kildonan, at the same rate schedule as if the territory were part of the city system. The Commissioner held that he had power to fix this rate under the terms of the franchise, which states that the fare to be charged shall not be in excess of certain figures. The agreement mentions the maximum fares to be charged, and it is accordingly evident that conditions should be examined into from time to time to see how the service, both as to rates and transportation provision, stands in relation to the public interests on the one hand, and fair returns to the company on the other. The order will provide for an adjustment of rates to the extent mentioned, and will require the filing of a plan and construction of a connection to improve the service.

The Quebec Court of Review gave judgment, June 12, on a question raised by the Montreal Street Ry. Co., in connection with the application made some two years ago by a number of its employes for the appointment of a Board of Conciliation under the Industrial Disputes Act. The company raised the point that it was a provincial organization and questioned the right of the Dominion Government to interfere, but on this point the court decided against the company. The men making the application were 40 in number, who formed a union after their dismissal, and the court has now held that this organization could not be regarded as a trades union as defined by the Quebec Act. Only one of the men forming it could be held to be an employe of the company at the time the union was formed, And the company had over 2,000 employes with whom there was no dispute. The court held that the men did not come within the provisions of the act and consequently the original prohibition against the appointment of the Board of Conciliation must be upheld.

Marine Department.

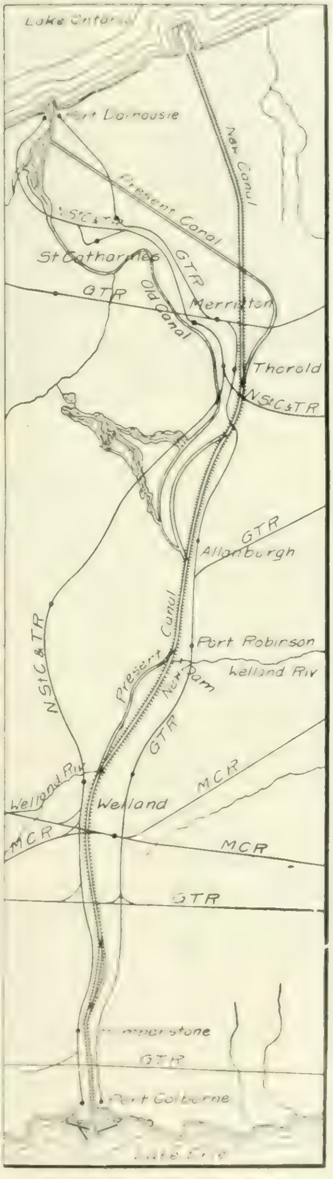
The New Welland Ship Canal Between Lakes Erie and Ontario.

The new Welland Ship Canal, [illegible] have been called for, as finally [illegible], follows the course of the present canal from Port Colborne on Lake Erie to Allanburg, about half way across the peninsula. From this point an entirely new cutting is to be made, crossing the present canal just below lock 25, the water level of the two canals at this point being the same, viz., 568 ft. above sea level. The new canal will again cross the present one below lock 11, the water of both canals at this point being at an elevation of 382 ft. above sea level.

The new canal will be entered from Lake Ontario at the mouth of Ten Mile Creek, about three miles east of Port Dalhousie, the entrance to the present canal. The total length of canal from lake to lake will be 25 miles, and the difference in level between the two lakes, 325½ ft., is to be overcome by seven lift locks, each having a lift of 46½ ft. These locks are to be 800 ft. long by 80 ft. wide in the clear, and with 30 ft. of water over the mitre sills at extreme low stages in the lakes. The width of the canal at the bottom will be 200 ft. and at first the canal reaches will be excavated to a depth of 25 ft. only, but all structures will be sunk to the 30 ft. depth, so that the canal can be deepened at any future date by the simple process of dredging out the reaches.

A new western breakwater, consisting of an immense rubble mound of stone from the excavation north of Port Colborne, and terminating in a timber and concrete head block located some 2,000 ft. farther out in the lake than the present breakwater, will be built to insure quiet water in Port Colborne harbor during storms, which is not the case now, the present breakwater not being far enough out in the lake to deaden the swells. The outer harbor at Port Colborne now has a 22 ft. depth of water at ordinary stages of the lake, which is as much as is available at most of the lake ports and in the channels connecting the lakes at present, and the deepening of this portion of the harbor may be left for a few years until the connecting channels in the lakes allow deeper navigation. The inner harbor at Port Colborne will be deepened to the proposed new depth, and the old locks and regulating weir now in the centre of the village will be entirely removed.

The present rock cut from Port Colborne to Humberstone will be deepened and widened on the west side, and just below Humberstone a thorough cut will be made across the point now forming Ramey's Bend, to materially straighten the canal. The material from this cut will be nearly all rock, and will be used to form the breakwater previously mentioned. A guard lock will be built in the rock cutting a short distance below Humberstone, and when this new cutting is ready for navigation a regulating weir will be built across the abandoned portion of the present canal, which will be used as a by pass to furnish water to the canal. This lock and regulating weir will control the elevation of the summit level of the canal, which it is proposed to keep at the level of extreme low water in Lake Erie, viz.: 568 ft. above sea level.



Route of New Welland Ship Canal

From Ramey's Bend to Welland the present canal will be [illegible] by excavating a strip along the [illegible] bank. Instead of building a new aqueduct at Welland, to carry the canal over the Welland River, it is proposed to raise the level of the river to that of the sum- [illegible] out into the Niagara River, at Chippawa, [illegible]

[illegible] bank between the canal and the river, through which vessels will again enter the canal prism.

The raising of the Welland River, above Welland, will flood some 1,600 acres of low land adjoining the river bed. This land is not of any great value, as it is flooded every spring by the flood water in the river and is principally used for pasturage. The Wainfleet Tsp., adjoining the Welland River on the south side, consists principally of low lying ground which drains into the Welland River, and to prevent damage to this land on account of the raising of the river, it will be necessary to open up most of the ditches from the point of their present entrance to the river to the intended high water mark.

The turning of the Welland River into the canal will pollute the waters which are at present used by the towns of Welland, Thorold and Merritton, and by the City of St. Catharines for domestic purposes. This may necessitate the construction of extensive filtering plants, which scheme is not looked upon with favor by those interested. An alternative scheme, to lay a pipe line from Lake Erie to the reservoirs of the different municipalities, through which clean water would be continuously pumped, is under consideration and appears to be the most feasible scheme available.

Between Port Robinson and Allanburg what is known as the deep cut (deepest cutting 66 ft.), will be deepened and widened by cutting a slice off the western bank. Allanburg is now the junction of the present and old Welland Canals, and the water required for the latter, which is quite considerable, on account of the numerous power developments along it, is taken into the canal through a weir at this point.

[illegible] the new canal, it is proposed to close the present old canal entirely between Allanburg and Marlatts Bridge, near Thorold, first building a new weir at the head of lock 25 of the present canal, to supply the above mentioned water. A dam will then be thrown across the old canal at Allanburg, and the old bed of the canal between the dam and Marlatts Bridge will be utilized as a dumping ground in which to place the material removed from the above [illegible] in widening the deep cut. This [illegible] a very convenient dumping ground [illegible] old canal will become more [illegible] as at present the entrance works are situated at an inconvenient distance from the remainder of the canal.

[illegible]

on the old canal, entrance may be had to it through lock 25 of the present canal, when the new canal is completed, by making a short cut through the bank separating the two waterways.

A pair of twin guard gates are located on the proposed canal, near the southerly limits of the Town of Thorold, and a short distance north of them will be located lock 7, the head of this lock being directly opposite the head of lock 24 on the present canal. The portion of the present canal between locks 25 and 24, together with a pond of about 27 acres, formed by flooding the upper valley of the Ten Mile Creek, will be utilized as a regulating basin from which water to fill lock 7 will be drawn. This method of drawing water from a side pond, instead of directly from the canal above, avoids the formation of objectionable currents and surges in the canal and locks, and is the method adopted for filling all of the locks.

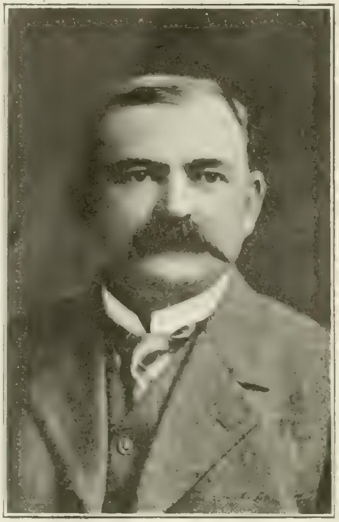
Below lock 7 will be a short reach of canal, with an adjacent side pond or regulating basin having a surface area of about 84 acres, and immediately below will be located twin locks 6, 5 and 4 in flight. These three locks will overcome a descent of 139½ ft. One flight will be used for down bound vessels and the adjoining flight for up bound, a double flight being required to save long delays in the passage of vessels through the canal.

The G.T.R. main line between St. Catharines and Niagara Falls will cross over the foot of twin locks 4, by means of two short bascule lift bridges.

The G.T.R. Port Dalhousie-Welland branch is situated just where the new locks are to be built, and it will be necessary to divert it some distance to the west. The diverted line will bear the same relation to the new canal as the present line does to the present canal, following upon the west side of the locks, but remaining on the west side of the canal for some distance above the present lock 25, when it will cross over the new canal on a bascule lift bridge to the east side.

From lock 4 the new canal will cross the meadow to the north, following in part the bed of Ten Mile Creek till it crosses the present canal at the foot of lock 11, at an elevation of 382 ft. above sea level, which is the level of the present canal at that point. This will enable small vessels, which wish to do so, to use the Port Dalhousie entrance as at present, as far as lock 11.

Lock 3 will be located immediately north of the present canal, and at its head on the east side will be an equalizing basin, or pond, of 150 acres. Below lock 3 a heavy cutting will be required through the village of Homer to the bed of Ten Mile Creek again, above Carleton St., and just below Carleton St. lock 2 will be located. It was difficult to find a location for this lock on account of the lack of rock for a foundation, but eventually a suitable foundation was found at the present site. The canal at the head of lock 2 will be at an elevation of 335½ ft. above sea level, and will flood about 200 acres of land in and adjoining the bed of Ten Mile Creek. Below lock 2 the canal will follow the bed of the creek to the lake, lock 1 being situated just below the Lake Road. The pond at the head of lock 1 will cover an area of 107 acres.

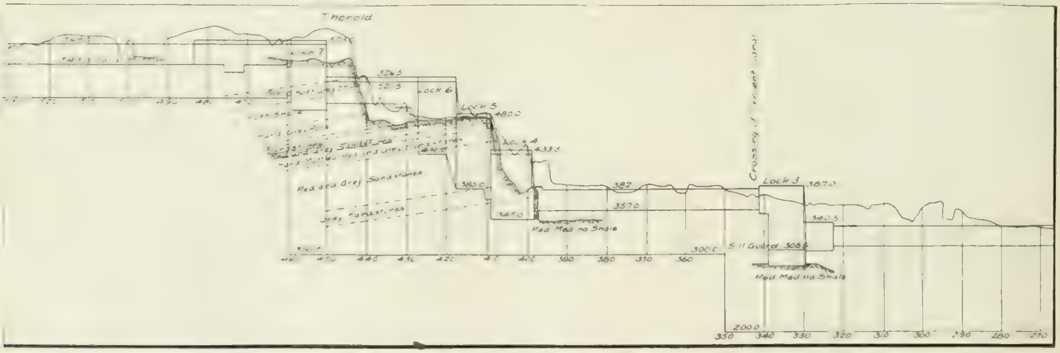


J. L. Weller, M. Can. Soc. C.E.,
Engineer in Charge, New Welland Ship Canal

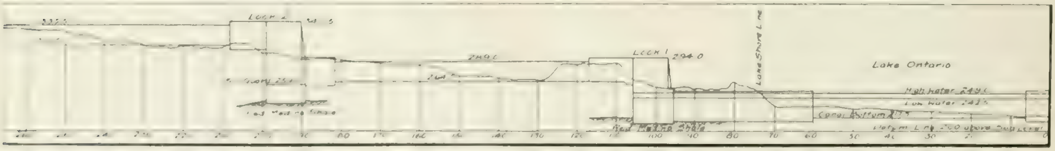
The outer entrance piers in Lake Ontario will be placed about a mile and a half from shore, where the depth of water is 30 ft. A wide channel will be dredged from these piers to lock 1. The sides of this channel will be protected near the shore end by reinforced concrete cribs, with concrete superstructures, alongside which vessels may lie. From the shore line of the lake to the outer entrance piers an embankment about 500 ft. wide will be formed on either side of the channel, from material excavated from the canal between the lake and Thorold. For the purpose of conveying this material from the different contracts to the lake, the Railways and Canals Department will build a double track railway along the west side of the canal from the foot of the flight locks near Merritton to the lake, and temporary trestles will be built out in the lake on either side of the harbor, from which to start the dumps. The railway will also be utilized to haul crushed stone from the site of the flight locks to locks 1, 2 and 3, where it will be used for making concrete. The contractor for the rock excavation from the site of the flight locks will, under his contract, be obliged to crush a sufficient quantity of the good rock taken from his excavation to supply all the crushed stone required for making all the concrete for the different locks and structures.

The lock walls will be 82 ft. above the top of the gate sills, and including the necessary foundation work required below this level two of the locks will have walls 100 ft. high.

The lock gates will be of the single leaf type, swinging on a hinge at one side of the lock, and resting in a notch cut in the opposite wall, a single leaf thus spanning the whole width of the lock chamber. The gate at the foot of each lock will be 83 ft. high and 88 ft. long, and will weigh about 1,100 tons.



Profile of North End of New Welland Ship Canal.



Profile of North End of New Welland Ship Canal (Cont'd.)

The valves and culverts in the walls will be of large dimensions and will permit of the lock being filled in less than eight minutes. This will mean that the time of passage through the canal will be very much reduced below that required at present, the estimated saving being three hours.

The length of the first section for which tenders have been invited is about 3 miles, and will include the pier works at the Lake Ontario entrance and lock 1.

The original and present canals followed a route from Port Colborne across the Niagara peninsula, practically paralleling each other at the northern end, entering Lake Ontario at Port Dalhousie. The original canal was commenced in 1824, and completed in 1833, the line following very closely certain water courses, to facilitate construction, making the length 27½ miles. This canal contained 27 locks, 24 of which were 150 by 26½ ft., and the other three, 200, 230 and 270 by 45 ft., respectively. The depth of water on the sills was 10½ ft., with a total lift of 326¾ ft. The initial construction of these locks gave a depth of 8 ft., the increase of 10¼ ft. being a subsequent change. The present canal was commenced in 1872, and completed in 1887. The route at the northerly end was slightly changed to the east near St. Catharines, the canal coming out into Lake Ontario at the same point as the original one. The locks are 26 in number, 270 by 45 ft., with a depth of 14 ft. over the sills.

The surveys for the new canal were made under the direction of J. L. Weller, M. Can. Soc. C.E., Engineer in charge, who also prepared the plans, etc., and to whom we are indebted for the foregoing particulars.

Work on the St. Lawrence Ship Channel.

In reference to the $894,000 provided for expenditure on the St. Lawrence Ship channel, the Minister of Marine recently stated in the House of Commons, that it is for the maintenance and operation of the dredging fleet, and was made up as follows: 6 elevator dredges with tugs, at $45,000 each, $270,000; 1 new steel elevator rock dredge or tug, $45,000; 1 new steel elevator rock dredge with tug, now under construction, and expected to be ready for next season, $45,000; 1 new self propelling steel elevator dredge with tug, being built by contract, half season, $25,000; 1 hydraulic dredge with two tugs, $118,000; 2 suction hopper dredges, 1 tug and 1 self propelling hopper barge, $150,000; 2 dipper dredges with tugs, at $40,000 each, $80,000; 2 inspection and sweeping tugs, at $18,000 each, $36,000; 2 stone lifters and 1 floating shop, $15,000; 1 rock cutter, $10,000; amount for outfitting, docking and providing extra parts for dredging fleet generally, including the necessary improvements to fleet, $100,000. It is estimated that to obtain a channel 35 ft. deep at extreme low tide, and 1,000 ft. wide, in the north channel below Quebec, 16,153,173 cu. yds. of material would have to be dredged. Of this 2,211,000 cu. yds. had been dredged up to Sept. 28, 1912. With the present two dredges in operation, it will take about eight months to complete the work, but as the various shipping interests are anxious that it be completed in a shorter time, it will be necessary to acquire an additional powerful dredge.

The Department of Railways and Canals has awarded the contract for the construction of a stern wheel tug, required in connection with the work of the Hudson Bay Ry., to Polson Iron Works, Toronto.

Fishery Patrol Steamboat for Lake Winnipeg.

The fishery patrol steamer now being built for the Department of Marine and Fisheries for service on Lake Winnipeg will be of the following dimensions: length over all 149½ ft.; length b.p. 140 ft.; breadth moulded 26½ ft.; breadth extreme 27 ft. ¾ in.; depth moulded 13½ ft.; draft mean 7½ ft.; indicated horse power 900; speed 12 knots.

The vessel has been specially designed for this particular service, and, in addition to performing general patrol duties, will be equipped with arrangements for carrying large quantities of spawn in connection with the fish hatchery at Lake Winnipegosis, together with an installation for the handling of buoys on Lake Winnipeg.

The vessel will be built of steel throughout, to Lloyds 100 A. 1. (lake service) class, and will have a raked stem and cruiser stern. The hull will be divided by five main transverse watertight bulkheads, and two longitudinal bunker bulkheads which will also be watertight. At the fore end, special strengthening will be introduced in order to meet the stresses set up when working in light ice. The under water portion of the vessel will be completely sheathed with wood, to afford protection as much as possible from wear and tear through grounding in shallow waters and working in ice.

The deck auxiliaries will include the usual windlass, capstan and steering gear. The steering engine will be located in the engine casing, connected to the rudder head by chains and quadrant, and controlled from the wheelhouse on the navigating bridge. Complete systems of steam heating, ventilation, pumping and draining, fresh water and sanitary services will be provided throughout the vessel, the latter service being on the pressure system, supplied from a duplex pump situated in the engine room. The electric generating plant will consist of a steam turbo-generator of 14 k.w. capacity, capable of supplying at the same time both the ordinary ship's lighting and searchlight. The searchlight, which will be located on the wheel house top, will be of 16,000 candle power, and arranged to work from the wheel house. The equipment of the vessel will be in accordance with Lloyd's rules and the Canadian Steamboat Regulations. In addition to the usual lifeboat accommodation, which will be sufficient for all on board, there will be provided on the boat deck a motor launch having a speed of about eight miles an hour.

Accommodation will be provided for a total complement of 17, including officers, men and fish crew. On the lower deck forward will be the dining saloon, steward's room, pantry, and cold storage, whilst aft on the lower deck will be the engineers', officers' and men's quarters, including crew's mess room and lavatories, and officers' bath and w.c. On the main deck will be the captain's cabin, entrance hall, bathroom and w.c., and spare stateroom, the galley being situated between the engine and boiler casings. At the aft end of the deckhouse will be a large spawn house, fitted up with racks and rollers, etc., and every convenience for the rapid handling of a large quantity of spawn. The navigating bridge will be on top of forward deckhouse, on which will be the wheelhouse, containing compass, wheelstand, chart table, etc. The coal bunkers will be placed longitudinally on each side of the boiler room, and have a capacity of about 60 tons.

The propelling machinery will consist of two sets of inverted, vertical, direct acting, [illegible] minute with 180 lbs. steam [illegible] will include air pump of the twin beam [illegible] heater, filter, injector, and fresh water and sanitary pump, will all be independent of the main engines. The motive power will be supplied from two [illegible] ended boilers 11 ft. diameter by 10½ ft. long, fitted with Morison's furnaces and [illegible] draught, the fan and engine being situated in the engine room.

The vessel was [illegible] being built under the superintendence of Chas. F. M. Duguid, Naval Constructor to the Department of Marine and Fisheries.

The Launching of the Cunard Liner Alaunia

The s.s. Alaunia, which the Cunard Line is having built for its Canadian service, was launched at Greenock, Scotland, June 7. She is a sister vessel of the s.s. Andania, launched for the same service in March. Her chief dimensions are, length 540 ft., breadth 64 ft., depth 46 ft., and she will be equipped with two sets of quadruple expansion engines, balanced to reduce vibration to a minimum. She will have all modern appliances for safety and comfort, including Marconi wireless telegraph apparatus, submarine signalling, etc. There will be accommodation for 2,140 passengers, for two classes, 520 second and 1,620 third. The cabins will be entirely on B and C decks, those on the former being all outside rooms. The lounge and writing room will be on A deck, also the smoking room, while immediately aft of the lounge will be a completely equipped gymnasium. The dining saloon will be on D deck, with all the customary kitchen accommodation. The third class accommodation has been designed to give the best service, and includes a ladies' room, two smoking rooms and a general room for music, etc.

Judgment on Appeal in the Bengore Head Stranding Case.

The appeal of Capt. Hoy, of the Head Line's s.s. Bengore Head, against the decision of the Dominion Wreck Commissioner, Oct. 17, 1912, re the stranding of the vessel in the Strait of Belle Isle, Oct. 5, 1912, when his certificate was suspended for three months, was heard before the Admiralty Court in London, Eng., recently, when the decision was quashed. In delivering judgment, the President, Sir Samuel Evans, said that he saw no reason to suppose that the master was inaccurate, negligent or over confident in taking bearings, and in the circumstances, (he had been on duty for 30 hours, and on the bridge for 20 hours), he was quite justified in going below after giving proper instructions to the second officer. To find the master primarily responsible for the casualty, under sec. 470 of the Merchant Shipping Act, the court obviously must have found that it was caused by his wrongful act or default, and this was not borne out by the evidence. The master's anxiety to clear his character was shown by the fact that the notice of appeal was given within six days, and the President thought he was justified in his action. The decision of the Canadian court must be reversed and the certificate restored as from the date of the suspension.

Suction Dredge for Dominion Government Harbor Work in Hudson Bay

Construction for the new harbor work which the Dominion Government is to build in Hudson Bay at the terminus of the railway from Pas, Man., is to be pushed forward during this summer, and a 24 in. suction dredge has recently been ordered for the work, to be completed for delivery within four months from the commencement of the construction, early in April. This will mean delivery in August, so that the dredge may be towed to the north before the close of the season. The Government intends using it in the latter part of the year, if the plans at present proposed are fulfilled. The progress of the work to date is such as would indicate that the delivery will be as contracted for.

A plan and elevation of the dredge are given herewith. It will be the second largest dredge ever built in Canada. Completely equipped, it will weigh 1,200 tons. It is to be 180 by 43 ft., with a moulded depth of 11 ft., and a draught of 6½ ft. It will be a double decked structure, steel throughout, and fitted with five bulkheads, dividing it into six watertight compartments. The 24 in. suction pump will be located in the forward end of the hold, directly connected with a 14 by 22 by 36 by 21 in. triple expansion engine, obtaining steam from two 13 by 12 ft. Scotch boilers, also located in the hold to the rear of the engines.

At the rear of the dredge will be the suction pipe and cutter head, on an arm pivotted to the rear end of the deck and supported at the outer end by cables from shear legs, one on each side of the deck, these latter being braced by cables from near the front of the boat. The cutter arm will dredge to a depth of 48 ft. The cutter at the outer end of the suction pipe arm is a steel casting with six attached manganese steel blades. Two sizes of cutters are to be employed, 4 ft. for hard material, and 5 ft. for soft material, both of the same general construction. These will be driven through a shaft along the cutter and suction arm, and a system of bevel gears, by double 12 by 12 in. vertical engines on the rear end of the deck. The suction pipe of 26 in. seamless tubing, ½ in. thick, will connect at the boat, through a ball connection, to a pipe running back to the centrifugal pump, which will discharge through a similar pipe running along the side of the boat to the front, where connection will be made with piping, 3,000 ft. of which is to be supplied. This latter is to be of the floating type, carried on each side by floating cylinders. When working with a short length of discharge pipe, the capacity will be 20 cu. yds. of solids a minute, or 1,200 cu. yds. an hour. When using the full length of discharge pipe, that is, 3,000 ft., the discharge will be reduced to 800 cu. yds. an hour. The design of the dredge is such that a side connection from the dredge near the pump can be easily arranged.

The operation of the dredge will be out of the ordinary, it not being of the stern pivot type. Two steam capstans will be located at the stern, and one at the bow, and by means of anchors located some distance each side of the vessel at both front and stern, the dredge will be moved from side to side bodily, the dredge end of the discharge pipe moving with it. The cutter and suction arm at the front will be raised and lowered by a winch engine in the centre of the vessel. All the control of the suction, cutter and winch machinery will be from a central point at the rear in an operating room, on the upper deck.

An 8 in. centrifugal bilge pump will be located on deck on the starboard side of the dredge, connected with all the bulkheads. This pump will be steam driven, obtaining the steam from a 48 in. locomotive boiler in front of it on the deck. This latter will also be used as a source of auxiliary steam, for use in heating the vessel when it is laid up and the main boilers are out of commission, also for auxiliary purposes.

There will be a 10 k.w. steam driven generating set in the engine room for the supply of electrical power. This will be used for lighting the ship, and for the search lights above the deck, front and rear.

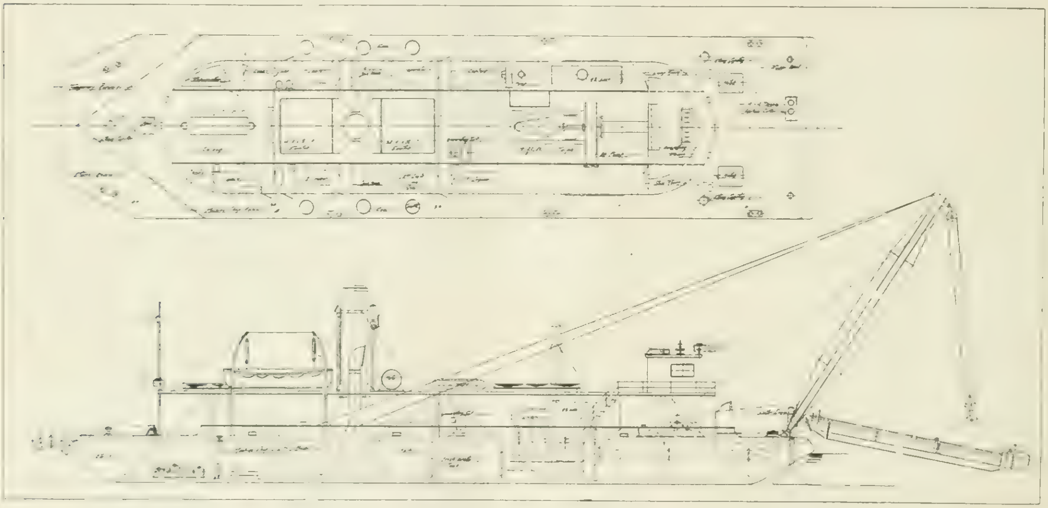
A most important feature of the dredge will be a complete machine shop, equipped with lathes, planer, drills, etc., in a room in the hold at the stern. In addition, there will be a compressed air unit with a supply of air tools, and a small brass furnace for the production of small brass castings. This will make the dredge self contained in the event of break downs far away from supplies.

Both sides of the main deck at the front of the engine room are to be divided off into cabins for the officers and crew, and the central part of the main deck at the front is to form a saloon. A crew of 35 will be carried.

The dredge, while operating for the most part in fresh water, is to be given salt water equipment throughout. This will include copper piping and there will be a fresh water tank of 80 tons capacity. The coal capacity will be 250 tons.

The dredge is to make the trip from Toronto, where it is being built, to Hudson Bay by way of the St. Lawrence River, being of a suitable size to pass through the locks, and round the Labrador coast, being towed all the way. Temporary rudders on each side of the stern will be added for the trip. The dredge is to be provided with 600 ft. of 1½ in. stud link chain with a 3 ton anchor. There is also to be a sea anchor in case it is necessary for the tugs to cast the dredge adrift at sea.

The dredge is being built by the Polson Iron Works, Toronto, to the designs of Wm. Newman, A.M.I.N.A., Works Manager. The motive power and auxiliary machinery were designed by J. Sharp, Chief Engineer. The short time allowed for the completion of the work by the company has necessitated carrying it on 24 hours a day. The cost of the dredge will be about $270,000.



24 inch Suction Dredge for Government Harbor Service in Hudson Bay.

The Lake Winnipeg Shipping Co. is arranging to extend its dock on the Red River, at Winnipeg, from the southern end of the existing dock near Broadway Ave., southerly for 475 ft., and also northerly for 100 ft. Hugh Sutherland, Executive Agent, Canadian Northern Ry., is President of the company.

The Northern Navigation Company's New Steamship Noronic.

The steamship Noronic, which was launched at Port Arthur, June 2, and which will run between Sarnia, Port Arthur and Fort William, Ont., and Duluth, Minn., will be the largest passenger vessel on the Great Lakes. Her principal dimensions are as follows:—

Length over all	385 ft.
Length between perpendiculars	[illegible]
Breadth, moulded	52 ft.
Depth, moulded	[illegible]

The hull is built on the Isherwood system of longitudinal framing. The frames, instead of running transversely, as in ordinary ships, run fore and aft, or longitudinally, and are supported by large plate web frames, fitted transversely, spaced 10 ft. apart. This construction is very much stronger than the old system, and is lighter, thus gaining in carrying capacity and speed. A double bottom is fitted 4¾ ft. deep, extending the full length of the vessel, and the hull is divided by eight watertight transverse bulkheads into nine compartments. Two collision bulkheads are fitted forward.

There will be six decks, all being made of steel, as follows: Main, spar, promenade, observation, boat and hurricane deck. The entrance hall or lobby will be on the main deck, the side walls will be panelled with quartered oak, with interlocking rubber tiling floors. The main stairway will lead to the social hall on the spar deck, and the office will be on the port side. This office is to be fitted similar to that of a large hotel, where clerks will be on duty at all times. There will be 151 staterooms on this deck, and it will be well equipped with lavatories, bathrooms, barber shop, etc. The main corridors of the spar deck will be finished in white enamel, with the social hall panelled in quartered oak.

The promenade deck will be panelled throughout in mahogany. At the forward end will be the drawing room, fitted with comfortable lounges, upholstered in Spanish leather. Aft of the drawing room will be ten en suite cabins, furnished in mahogany. These rooms will be fitted with brass beds and each will have a private bathroom adjoining, finished in white tiling. The smoking room, at the after end, will be finished in fumed oak. There will be 70 ordinary staterooms on this deck. There will be a wide promenade extending completely around the vessel. The distance around will be about 880 ft.

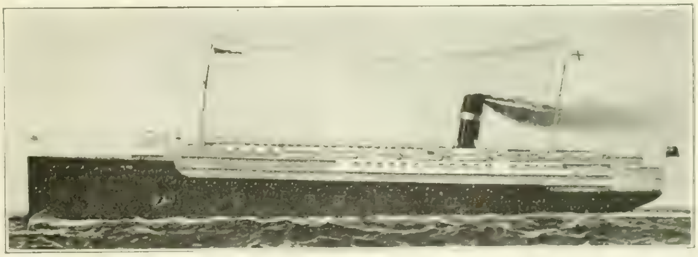
The observation deck will contain the observation room, dining room, kitchen, store rooms and refrigerating rooms. The observation room, at the forward end, will be 140 by 38 ft., panelled in quartered oak. The floor will be waxed oak for dancing. The observation room will be divided from the dining room by folding glass partitions, and an orchestra stand will be built at this point, so that the music may be used for dancing or the glass doors may be folded back for the dining room. The dining room will be 180 by 50 ft., with a seating capacity of 286. The side walls will be panelled in mahogany, the tables and chairs will be of mahogany, and the ceiling will be enamelled white, with raised ornamental figures. The electric lighting will be indirect, large bowl fixtures being fitted over each table. Fireless cookers will be fitted at each table for the purpose of keeping vegetables, etc., warm. The kitchen will contain ranges, steam tables, plate warmers, broilers, electric toasters, egg boilers, dish washers, etc. The refrigerating rooms will contain separate compartments for meats, fruits, butter and eggs, fish, and an ice making room. The cooling system will be a 12 ton [illegible] capacity [illegible] machine.

The boat deck will be finished [illegible] in quartered oak panels, and a large dome skylight will be fitted overhead extending the full length of the cabins. There will be 48 staterooms on this deck, together with large [illegible] quarters and pilot house will be located forward, and the [illegible] rooms, recreation rooms and bakery aft. Fourteen life boats will be fitted, each 24 ft. long. In addition, there will be carried life rafts, so that the combined capacity of boats and rafts will be sufficient to carry all the passengers and crew.

All of the staterooms will be completely fitted out with single upper berths and double lower berths, with electric reading lights at the head of each berth. Vitreous wash stands, with hot and cold running water, will be fitted in each room.

The electric fixtures and decorations throughout will be special features of the whole design, and are being tastefully obtained by a careful selection of woods worked out, simplicity, with rich effects was taken as the keynote, in preference to using large ornaments and gilt.

The lower hold will be divided into four cargo compartments, each provided with two cargo hatches through main deck. The 'tween decks will have five gangways on each side, in addition to the passengers and engineers' gangways. The sides of the hold and 'tween decks will be covered with wood sparring, to prevent freight package from damage.



Northern Navigation Co.'s s.s. Noronic.

The engines will be of the four crank, triple expansion type, built for Dominion Government requirements, for 200 lbs. pressure at high pressure engine. The cylinders will be arranged from forward to aft with low pressure, high pressure, intermediate pressure and low pressure, the high pressure being 29½ ins. int., 47½ ins., and the two lows 58 ins., with a common stroke of 42 ins. The pistons will all be of the dished type, h.p. cast iron solid and the int. and low pressure of cast steel. The forward pair of cylinders will not be rigidly held together, but will have a brass slip joint, which will connect them to the after pair, allowing for expansion and vibration. The cylinders will be supported on four heavy back columns, which will carry an adjustable slipper guide with loose face, water cooled, and six front columns, well braced together. The cylinder lagging will be of planished steel. The connecting rods will be forked at the top end and tee head at bottom, with steel bearings lined with white metal. The crank shaft will be 14¾ ins. diam., and the cranks will be counterbalanced to reduce vibration to a minimum. The valve gear will be the Stephenson link, with adjustable cut-off. The h.p. will have [illegible] improved assistant cylinders. Connected to [illegible] condenser. Bilge and cooler pumps will also be attached to the main engine. A double cylinder turning engine will be arranged for turning on main engine. The engine will be provided with a six collar horse shoe thrust bearing, lined with white metal. Propellers will be cast steel on cast iron hub. The bed plate will have six main bearings and will be of the box section, girder design. Circular steel shells in square boxes will be used on bearings, so they can be removed without disturbing shaft.

There will be four main boilers 15½ ft. inside diam., by 11 ft. inside of heads, for Canadian and Lloyd's rules, 200 lbs. per square inch. Each boiler will contain 452 2¾ o.d. tubes, 7¼ ft. long, and three 48 in. furnaces. The shell plates of the boilers will be made in two pieces, having no circumferential seam in centre. The auxiliary boiler will be 12½ ft. diam., by 11 ft. between heads, and will have 296 2¾ in. o.d. tubes and two 48 in. furnaces, shell in two plates, for 200 lbs. per square inch pressure. Forced draught will be used, air being supplied by two blowers, with 48 in. wheel, direct connected with double enclosed, self oiling engine, arranged so that one blower can supply all the air should accident happen to the other. Patent flue blowers will be fitted in the breechings of each boiler, to blow tubes in boiler and air heater tubes. Four of the latest improved ash guns will be fitted in the fire rooms.

Two 12-16-18 in. ballast pumps are installed in engine room and connected to manifold, which in turn is connected to all ballast piping in boat. The two main feed pumps will be single 12-8 by 24 in. vertical pumps, which will pump directly to the feed water heater, the latter being of the horizontal film type, with copper tubes, and capable of raising the temperature of 80,000 lbs. water per hour from 130° Fr. to 210° at delivery. The tubular hot water heater will be fitted for sanitary system of boat, water heated by auxiliary steam after passing through main heater.

The main steam pipe will be of steel and will be connected by heavy forged steel flanges, expanded and rivetted to pipes. The steering engines will be of the direct acting type, both geared to cut toothed quadrant and arranged so that either can be thrown in or out of gear from pilot house at will. The windlass will be spur geared, 10 by 10 ft., and will be arranged with wire spools, and supplied with clutches and brakes for handling wire lines. A 12 by 12 in. cargo hoisting engine will be supplied with all [illegible] for handling cargo.

A large party of Richelieu and Ontario Navigation Co.'s directors and guests went from Sarnia, Ont., on the s.s. Hamonic to witness the launching. The Managing Director, James Playfair, was called back shortly after the Hamonic passed Sault Ste. Marie, owing to his father's fatal illness, in consequence of which the christening was performed by Mrs. E. Bristol, wife of another director, instead of by Mrs. Playfair, as at first intended. A large number of Winnipeg people were also present, having travelled by special train. After the launching the guests were entertained at luncheon on the Hamonic by the builders, the Western Dry Dock and Shipbuilding Co.

The Proposed Montreal-Georgian Bay Ship Canal.

In connection with the proposal to build a ship canal between Montreal and Georgian Bay, utilizing the French River for a portion of the route, and on the discussion, in the House of Commons, recently, on a vote for $500,000 for French River waterways improvements, the Minister of Public Works stated that he was carrying out the recommendation made some years ago by the Royal Commission on Transportation, to the effect that it would be advisable to have an investigation made of the commercial feasibility of the project. Regarding the French River end of the route, he estimated that sufficient water power would be developed to repay interest of the proposed outlay of $500,000. The report made by his predecessor in office had resulted in complete information being on hand with reference to the engineering features of the work, and in that respect it was regarded as feasible, but he considered it necessary also to ascertain the commercial value of the undertaking, and such information would be obtained. In the meantime it was proposed to develop the French River section.

The Canadian Gazette, London, Eng., which is usually well informed in regard to Canadian affairs and accurate in its statements, has evidently been misled in regard to the position of this project. In a recent issue it states that the scheme has made considerable progress, that both political parties have pledged their support to it, that it will be financed largely by means of bonds guaranteed by the Dominion Government, and that the financial side of the question is in the hands of Sir Robert W. Perks, who has recently returned to England.

It might be concluded from the Gazette's remarks that the Dominion Government has completely endorsed the project and is prepared to go ahead, but as above pointed it was distinctly stated in the House of Commons recently by the Minister of Railways and Canals that the commercial side of the matter would be thoroughly enquired into before anything is decided on. When this occurs the next decision for the Government to make will be whether the work shall be carried out as a public one, by letting contracts for construction to contractors, or if it shall be built by Sir Robert W. Perks' company under a Government guarantee or aid. The statement that the financial side of the question is already in his hands appears to be at least premature.

The hearing of the actions between Mackenzie, Mann and Co. and James Dunsmuir arising out of the sale of the Dunsmuir interests in collieries, etc., on Vancouver Island, in June, 1910, was begun in a British Columbia court, May 13.

Dominion Government Lightship for Halifax

The Dominion Government has awarded a contract for the construction, equipment and delivery of a steel single screw steam lightship for service at Halifax, the vessel to be built at Paisley, Scotland. The principal dimensions are:—

Length over all	135	ft.	0	ins.
Length on waterline	114	"	0	"
Beam, moulded	29	"	0	"
Depth, moulded	14	"	8	"
Draught	12	"	9	"
Complement	16			

The vessel is to be built of mild steel throughout, to be classed 100 A1. at Lloyd's, and fitted out in accordance with the Board of Trade regulations and Government inspection. The stem will be of the clipper, and the stern of the elliptical type. Four transverse watertight bulkheads will be fitted, while watertight flats at the bow and stern will, with the bulkheads adjoining, form trimming tanks. There will be three decks, the main and spar decks being continuous, and the lower deck extending from the stem to the coal bunker bulkhead, and from the stern to the after engine room bulkhead.

A powerful revolving lantern will be carried on a heavy steel tower, access to the lantern chamber being made by a stairway inside. Inside the lower portion of the tower will be a large air pressure tank for supplying the fog horn, which will be on the spar deck just forward of the tower. In the engine room on the level of the main deck will be two air compressors connected to this tank. The oil for the lantern will be controlled by a pump situated in the oil room on the lower deck forward. In addition to the fog horn, a large organ whistle will be fitted to the funnel.

The deck machinery will consist of a large windlass of special design, for the handling of the heavy mooring anchors, and a small steam winch on the spar deck for working the boats, etc.

A complete electric lighting installation will be fitted throughout the ship, supplied by a steam turbo generating set in the engine room.

Complete fresh water and sanitary, fire, and steam heating systems will be fitted in the most up to date manner.

Besides the lantern tower, the vessel will have a main mast carrying a main sail and wireless aerials. The boat equipment will consist of one 23 ft. lifeboat on the port, and a 24 ft. motor launch on the starboard side.

Accommodation for captain, officers and engineers will be provided aft on main deck, while forward on the same deck will be the crew's quarters, including galley, pantry, mess rooms and store rooms. On the lower deck aft will be the engineer's workshop, sail room and provision rooms, and on the lower deck forward the carpenter's shop, oil rooms, cold storage, galley coal bunker, and various store rooms. On the spar deck aft, the wireless cabin and companion to officers' quarters will be located, and forward at base of lantern tower will be the chart room and companion to crew's quarters.

In the hold forward and in the tunnel aft will be placed large fresh water tanks of a capacity of 7,000 gals., while arrangements will also be made for catching, storing, and making use of any rain water which may fall on the decks.

The propelling machinery will consist of one set of fore and aft compound engines, having cylinders 16 and 32 ins. diameter by 24 ins. stroke, driving a right hand four bladed propeller. The complement of independent auxiliaries will be very complete, and will include air, circulating, feed and bilge pumps, general service fresh water and sanitary pumps, also an evaporating and distilling plant for the supply of fresh water, capable of distilling 2,000 gals. of fresh water per 24 hours.

Steam is to be supplied from two Scotch boilers 10½ ft. diameter by 10¾ ft. long, designed for a working pressure of 120 lbs. per sq. in.

The vessel was designed by Chas. Duguid, Naval Constructor, Marine and Fisheries Department.

The Marine Department will shortly call for tenders for the construction of a steamboat, to be named Scout, for use in the lighthouse service between Montreal and the Welland Canal. The dimensions of the vessel will be, length 155 ft., breadth 30 ft., depth 13 ft., and it is stated that a special stipulation will be made that the vessel is to be built in Canada.

Sault Ste. Marie Canals Traffic.

The following commerce passed through the Sault Ste. Marie Canals during May, 1913.

ARTICLES			CANADIAN CANAL	U. S. CANAL	TOTAL
Copper	Eastbound	Short tons	943	16,914	17,857
Grain	"	Bushels	7,598,425	7,357,033	14,955,458
Building stone	"	Short tons			
Flour	"	Barrels	345,180	980,041	1,325,221
Iron ore	"	Short tons	4,780,603	2,235,023	7,015,626
Pig iron	"	"		3,759	3,759
Lumber	"	M. ft. b.m.	1,112	76,235	77,347
Silver ore	"	Short tons			
Wheat	"	Bushels	11,615,249	11,060,723	22,675,972
General merchandise	"	Short tons	5,667	38,502	44,169
Passengers	"	Number	806	852	1,658
Coal, hard	Westbound	Short tons	116,433	294,912	411,345
Coal, soft	"	"	497,921	1,878,482	2,376,403
Flour	"	Barrels			
Grain	"	Bushels			
Manufactured iron	"	Short tons	13,665	43,887	57,552
Iron ore	"	"			
Salt	"	Barrels	5,201	168,937	174,138
General merchandise	"	Short tons	79,867	92,826	172,693
Passengers	"	Number	1,316	346	1,662
Summary.					
Vessel passages	"	Number	1,101	2,084	3,185
Registered tonnage	"	Net	3,757,130	4,428,931	8,186,061
Freight—Eastbound		Short tons	5,318,471	3,013,707	8,332,178
Westbound		"	708,569	2,335,448	3,044,017
Total freight		"	6,027,040	5,349,155	11,376,195

Hydrographic Vessel for Dominion Government Service.

The steamship Acadia, which was launched at Newcastle on Tyne, Eng., for the Dominion Government's Hydrographic Service, is 170 ft. long, 33½ ft. beam, and will attain the highest class in Lloyds Register. She will be schooner rigged and will be propelled by a set of triple expansion engines, supplied with steam by two boilers working under forced draught, and is expected to have a speed of 12 knots an hour.

She is built of steel, and strengthened to enable her to run through ice, and will be completely outfitted for her intended service, having two motor launches, sounding machine, marine sentry, sounding winch, electric light with projector, etc.

Besides the usual accommodation for the deck and engine room officers, there will be well furnished rooms for the various officials engaged in survey work.

The vessel is being constructed to the designs and under the superintendence of R. L. Newman, of Ottawa, who was present at the launch.

A full illustrated description of this vessel appeared in Canadian Railway and Marine World for Nov., 1912, pg. 577; see also C. R. & M. W., July, 1912, pg. 370; Aug., 1912, pg. 425; and Oct., 1912, pg. 530.

Dominion Government Hopper Barge for St. Lawrence River Dredging.

The Dominion Government hopper barge No. 1, was launched at Levis, Que., recently. She is classed 100 A1, Lloyd's River Service, built under special survey and according to Canadian regulations. The deck arrangements consist of a series of six double doors on each side, operated separately or simultaneously, and when open, are so arranged that they do not extend below the bottom of the hull. The propelling machinery consists of triple expansion engines with cylinders 14¾, 24 and 38 ins. diar., by 22 ins. stroke, supplied with steam at 180 lbs. by two horizontal multitubular boilers, each 10 by 10 ft. There are two pumps of the vertical direct acting type, air pump, feed heater, evaporator and filter, centrifugal circulating pump, general service pump, two separate acting bilge pumps, sanitary and fresh water pumps, patent ash ejector, etc. The deck machinery consists of a capstan at the after end, a winch for operating the hopper doors, and windlass on the forecastle deck for the anchors. A steam steering gear is operated from the flying bridge, and electric lighting and steam heating services are installed. The general dimensions are: length between perpendiculars 180 ft., breadth 32 ft., depth 14½ ft., draught 12 ft., gross tonnage 850.

New Vessels for the Canadian Pacific Railway British Columbia Coast Service.

As reported in Canadian Railway and Marine World for June, the C.P.R. has ordered to be built at Dumbarton, Scotland, two vessels for service on the Pacific coast to be ready early in 1915. They will be somewhat of the appearance of the s.s. Princess Charlotte, and equipped with turbine engines, fitted with oil burning apparatus. They will be built on the cruiser stern principle, with three decks and three funnels. There will be accommodation for about 450 first class, and 80 second class passengers. J. W. Troup, Manager, C.P.R. British Columbia Coast Service, who went to Great Britain in connection with the placing of the contract, returned to Canada, June 5.

Canadian Notices to Mariners.

The Department of Marine has issued the following:

138. May 7. New Brunswick, east coast, Northumberland Strait, Shediac Bay, Pointe du Chene, Shediac north channel range light towers increased in height.

139. May 7. Quebec, Gulf of St. Lawrence, Anticosti lightship, date to be replaced on her light station.

140. May 7. Quebec, River St. Lawrence, St. Thomas bank, gas buoy established.

141. May 7. Quebec, River St. Lawrence, ship channel between Quebec and Montreal, Gentilly front range light, illuminating apparatus.

142. May 9. Quebec, River St. Lawrence, Lake St. Louis,, Lachine range lights, illuminating apparatus.

143. May 9. Quebec, Ottawa River, Lake of Two Mountains, St. Placide front range light, illuminating apparatus.

144. May 9. Ontario, Lake Ontario, Wicked Point, light to be discontinued.

145. May 9. Ontario, Lake Ontario, Cobourg harbor, change in character of buoy marking submerged portion of central pier.

146. May 9. Ontario, Lake Huron, north channel, Bruce Mines, change in color of light.

147. May 9. United States of America, Lake Superior, Duluth-Superior harbor, St. Louis River range lights, color to be changed.

148. May 12. New Brunswick, south coast, off Negro Head, change in character of buoy.

149. May 12. New Brunswick, east coast, entrance to Shippigan Gully, bell buoy to be established.

150. May 12. Nova Scotia, south coast, Port Hebert, buoy established.

151. May 12. Prince Edward Island, east coast, Cardigan Bay, Mosquito Shoal, buoy established.

152. May 13. Ontario, Bay of Quinte, Nigger Narrows, shoal removed.

153. May 13. Ontario, Lake Ontario, Burlington Bay, entrance to Desjardins Canal dredged.

154. May 13. Ontario, Georgian Bay, east side, Matchedash Bay and Coldwater Creek, dredging, buoys established.

155. May 14. British Columbia, Burrard Inlet, north arm, southwestward of Turtle Head, buoy established.

156. May 14. 156 British Columbia, Strait of Georgia, Sutil Channel, Mary Island, Boulder Reef, buoy established.

157. May 14. United States of America, Washington, Rosario Strait, Cypress Island, rock reported westward of.

158. May 16. Nova Scotia, north coast, Northumberland Strait, Caribou Reef, conical buoy to be replaced by bell buoy.

159. May 16. Prince Edward Island, north coast, Tracadie back range lighthouse, illuminating apparatus.

160. May 16. New Brunswick, Chaleur Bay, Petit Rocher, permanent light.

161. May 16. Quebec, River St. Lawrence, Long Pilgrim light, change in illuminant.

162. May 19. Nova Scotia, south coast, Lahave River, bell buoy to be established.

163. May 19. Nova Scotia, Gut of Canso, Port Hastings, removal of storm signal station to Point Tupper.

164. May 19. Prince Edward Island, south coast, Hillsborough Bay, Hazard Point, color of range lighthouses.

165. May 19. New Brunswick, east coast, Northumberland Strait, Shediac Bay, Shediac harbor, dredging, buoy established.

166. May 20. Ontario, Lake Ontario, Toronto harbor, dredging.

167. May 20. Ontario, Detroit River, gas buoy at junction of Ballard Reef and Livingstone Channels, change in color of lights.

168. May 20. Ontario, Detroit River, Livingstone Channels, change in position of gas buoy.

169. May 23. Quebec-Ontario, River St. Lawrence, Lake St. Francis, western portion, chart, Lancaster Bar to Cornwall issued.

170. May 23. Ontario, River St. Lawrence, Thousand Islands, description of light on island west of Duck Island.

171. May 23. Ontario, Lake Ontario, Toronto harbor approaches, buoyage.

172. May 23. Ontario, Lake Huron, north channel, Little Current, construction of railway bridge, north opening obstructed by false work.

173. May 26. Ontario, Georgian Bay, approach to Midland, east of Elimere Point, McNicoll range lights established, Old Midland range lights to be discontinued.

174. May 27. British Columbia, Burrard Inlet, First Narrows, west entrance, new lighthouse and fog alarm.

175. May 27. British Columbia, Queen Charlotte islands, Hecate Strait, gas lighted beacon moved from Koya Point to Danger Rocks.

176. May 30. Ontario, Lake Ontario, Oakville, harbor entrance, position of lighthouse corrected.

177. May 30. Ontario, Detroit River, Livingstone Channel, gas buoy no. 29, change in characteristic of light.

178. May 30. Ontario, Detroit River, Ballard Reef Channel, light vessel replaced.

179. May 30. Ontario, Georgian Bay, north side, western approach to Killarney, Ann Long Bank, buoy established.

180. June 2. Nova Scotia, Avon River, Dimock Point, change in color of light.

181. June 2. Nova Scotia, south coast, Aspotogan Peninsula, New Harbor, light established.

182. June 2. Prince Edward island, south coast, Northumberland Strait, Belle River, light established.

183. June 2. Quebec, River St. Lawrence, Quebec harbor, off mouth of St. Charles River, buoy moved.

184. June 4. Maritime Provinces and Quebec, Canadian list of lights and fog signals, new edition.

185. June 4. Nova Scotia, Chedabucto Bay, Guysborough harbor, buoyage.

186. June 4. Quebec, River St. Lawrence, Godfry River, range of day beacons established.

187. June 6. Nova Scotia, south coast, Torbay, entrance to Larry River, buoys established.

Pilotage in the St. Lawrence River.

An order in council has been passed amending bylaw 22 of Montreal Pilotage District bylaws, which now reads as follows:—"Any pilot may, with the approval of the Minister, agree with the agent of one or more regular lines of vessels for special services for a season of navigation, and any pilot not having made such agreement shall when required by the superintendent repair on board and take charge of any vessel and pilot the same according to the tenor of the requisition so made to him. No agent or firm having only one vessel a month—a monthly service of one vessel—shall be allowed to engage a special pilot for that service, but may be authorized to arrange with another agent or firm in a similar position, to share the services of a pilot, and failing this to be obliged to go to the tour de role when a pilot's services are required.

Canada Transportation Lines, Limited, to take Over the Richelieu and Ontario Navigation Company, Etc.

A special general meeting of shareholders of the Richelieu and Ontario Navigation Co., Ltd., was held at the company's office, Montreal, June 19, to ratify an agreement of sale of the company's assets and undertaking, as a going concern, to a new company formed for the purpose. The President, Jas. Carruthers, said:—

This matter has received the most earnest and careful consideration by your directors and before sending out this notice, they were unanimously of the opinion that it was in the interests of this company to become part of a large organization. A new company has been formed called the Canada Transportation Lines, Limited, the authorized capital of which is $25,000,000, divided into 125,000 7% cumulative preference shares of $100 each, and 125,000 ordinary shares of $100 each, and with authority to issue 30 year 1st mortgage debenture stock of $8,000,000, bearing interest at 5%, with power to increase the amount of such mortgage debenture stock from time to time, providing the proceeds thereof are used for the purchase of new boats or other property necessary for the company to acquire, and on the terms more fully to be set forth in the mortgage trust deed. The trustees for such debenture stock will be the Law Debenture Corporation, London, Eng., and the Prudential Trust Co., Montreal. The registrars for such stock will be the Royal Trust Co., Montreal, and Brown-Shipley & Co., London, Eng. The registrars for shares will be the Royal Trust Co., Montreal and London. Transfer agents, Prudential Trust Co., Montreal and London. Bankers, the Bank of Montreal. Brokers, J. & A. Scrimgeour, and Linton, Clarke & Co. Auditors, Marwick, Mitchell, Peat & Co.

Further particulars of the new company and other matters connected therewith will in due course be given to shareholders. It is expected the new company will eventually acquire as going concerns, including all their assets, good will and profits for the current year, the following companies:—Richelieu & Ontario Navigation Co., Ltd.; Inland Lines, Ltd.; Northern Navigation Co., Ltd.; St. Lawrence River Steamboat Co., Ltd.; Richelieu & Ontario Navigation Co. of U.S.A.; Quebec Steamship Co., Ltd.; Canada Interlake Line, Ltd.; Ontario & Quebec Navigation Co., Ltd.; Merchants' Montreal Line; S. S. Haddington; Thousand Island Steamboat Co., Ltd.

The assets of the above companies have all been appraised by the Canadian Appraisal Co. and the accounts have been audited by Marwick, Mitchell, Peat & Co. Their reports and statements are open to the inspection of shareholders, and have been carefully examined by your board. Assuming the purchase to be carried out on the lines proposed, the new company will [illegible] by the statement of the appraisal company of $33,055,538, in which vessels have been valued at $16,866,834; real estate, buildings and dock prop- [illegible] would be cash on hand, and $8,698,969.89 would represent the value of leases, contracts and goodwill acquired by the company and covered by ordinary shares. The new com- [illegible] above the debenture stock issued, and current accounts. The net earnings of the consolidated companies for the year ended Dec. 31, 1912, was $1,494,554.48, which shows an ample amount for the payment of interest on debenture stock and interest on the preference stock with a fair amount applicable to reserve and ordinary stock.

Allowing for new tonnage not in operation in 1912 on the same basis as earnings on similar tonnage in 1912, the increase in net earnings from this source alone over last year would amount to $263,000. In the item of insurance premiums I am advised by competent authority that a reduction of a considerable amount can be effected.

The impression that prevails in some quarters that it will be necessary for the new company to advance rates in order to improve its financial position is entirely unfounded. After giving the matter careful consideration, I am of opinion that the savings that can be effected by the new company over the individual companies in handling their boats, in preventing overlapping, and by giving a prompter and more efficient service, would be very great.

The important points that your directors had to consider was whether in their opinion it was in the interest of the Richelieu shareholders to sell out the assets and undertaking of that company, and if so, whether the Richelieu shareholders were in their opinion obtaining a fair share of the stock of the new company for the stock which they now hold. It is proposed that the shareholders of this company receive $12,000,000 7% cumulative preference shares of the new company for the $10,000,000 of Richelieu stock. For example, each holder of 10 shares of Richelieu will receive 1[illegible] fully paid 7% cumulative preference shares of the new company, and in addition 4 fully paid ordinary shares, which I think you will agree with your directors is an excellent arrangement.

The most important reason for your board being willing to advise the sale of the Richelieu assets and undertaking at the present time, is the fact that in their opinion it is essential to put the affairs of the company on the soundest possible financial basis both for the present and future requirements.

The growth of the water transportation on the Great Lakes is assuming enormous proportions, and if Canada in the future is to continue to go ahead as she has in the past, the growth of this trade from year to year is going to be very great.

This means that if we are to give satisfactory service to the farmers and shippers of this country we must be in a position to provide new boats from time to time and see that the grain grown in the country gets out of it in the promptest, cheapest and most efficient manner. In view of the world-wide financial stringency and the fact that requirements for money would be practically a matter from year to year, it commended itself to the judgment of your directors to sell to the larger organization which, in our opinion, will be able to finance the new company on a much better and more satisfactory basis than any smaller individual company can do.

Furthermore, we believe it to be in the interests of the water transportation companies of Canada that they should get [illegible] capital on a large scale interested in this business just as it is today interested in the great railways of the country. The only way this could be accomplished successfully in the opinion of your Board was to be connected with a new company large enough to command the interest of some of the most important financial [illegible] London. [illegible] which are connected with the proposed financing of the new company are, in my opinion, the best available, and the result will be, in my judgment, the placing of the new company, which means your company, on a permanently sound financial basis where it can from time to time reach the money markets of the world on the most favorable terms.

Moreover, the fact that the $25,000,000 authorized capital of the new company will be listed on the London Stock Exchange, and a substantial portion of the preference stock will be taken at par by strong financial interests in London, is, in my opinion, a strong factor in advising the shareholders of this company to confirm the sale which your directors advise.

The President, in response to questions, stated that the $8,000,000 debenture issue would be utilized in retiring the bond obligations of the old company, in acquiring new properties, and in furnishing a working capital of approximately $600,000.

A. Haig Sims and G. Caverhill asked about the disposition of the $500,000 preferred and $8,500,000 common stock in the new company which will be left over after acquiring the R. & O.N. Co., and as to how much of it was to be issued to promoters, etc., but the president said he was unable to answer this.

On motion of J. P. B. Casgrain and Aemilius Jarvis, a resolution sanctioning the agreement was adopted.

Of the companies named above, which will be acquired by the new company, the Richelieu and Ontario Navigation Co., Ltd., already controls, either by purchase outright, or by a large majority of the stock, the Inland Lines, Ltd., Northern Navigation Co., Niagara Navigation Co., St. Lawrence River Steamboat Co., Thousand Island Steamboat Co., and Merchants' Montreal Line, details of which have been given in previous issues of Canadian Railway and Marine World.

The Ontario and Quebec Navigation Co. was recently acquired by Aemilius Jarvis and Co., Toronto, and full details were given in our last issue.

The s.s. Haddington is owned by the Mathews Steamship Co., Toronto, and was built at Toronto in 1904, her dimensions being, length 256 ft., breadth 42½ ft., depth 15 ft.; tonnage, 1,603 gross, 1,010 register; and she is equipped with engine of 87 n.h.p., driving a screw.

The Quebec Steamship Co. owns the s.s. Cascapedia, operating between Montreal, Gaspe, Mallbaie, Perce, Summerside, Charlottetown and Pictou; and in addition operates a service between New York, Bermuda and the West Indies, with the steamships Bermudian, Guiana, Parima and Korona. In summer it operates the s.s. Trinidad between Quebec and New York.

Canada Interlake Line, Ltd., was formed at the close of 1912 to consolidate the interests operating under the name of the Merchants' Mutual Line, and full details, covering the vessels operated, etc., were published in our January issue.

Comparison of the Largest Vessels.

Below is a tabular statement of the dimensions of the Olympic, the largest vessel in service; the Mauretania, only recently the record holder; the Imperator, of the Hamburg-American Line, recently built; the Aquitania, of the Cunard Line; and the Vaterland, of the Hamburg-American Line, the two latter being under construction:—

Ship	Gross tonnage.	Length, ft.	Breadth, ft.	Date.
Mauretania	[illegible]	790	88	1907
Olympic	45,000	883	92	1911
Imperator	50,000	900	96½	1913
Aquitania	50,000	901	97	Building
Vaterland	[illegible] +	950	100	Building

Tug for Harbor Work in Hudson Bay.

The Department of Railways and Canals has given a contract to Polson Iron Works Ltd., Toronto, for a steel stern wheel tug, to be used in the harbor work at the government railway terminal on Hudson Bay. The dimensions will be: length over all 117 ft., breadth 18 ft., depth moulded 4 ft., draft [illegible] 2 ft.

The framing is to be spaced 18 in. centres, and to consist of [illegible] angles throughout, plating to be [illegible] in. steel throughout, to have three transverse watertight bulkheads, [illegible] Wales to be of [illegible] oak, held in place by [illegible] angles. Stringer plate to be [illegible] in. thick all around tug and connected to sheer plate by [illegible] gunwale bar. Sheer plate to extend 12 ins. above above deck to receive cabin stanchions; forward of cabin, sheer plate to extend 30 ins. deck to receive cabin stanchions; fore and centre truss to consist of [illegible] in. plate, 15 ins. wide; to have two slide keelsons of 6 in. shipbuilding channels from end to end. To have ample accommodation for crew, with complete outfit such as electric light plant, plumbing and steam heating, galley furnishings, etc.

Machinery to consist of one pair of stern wheel engines, having cylinders 12 ins. in diameter by 48 ins. stroke, built for a working pressure of 160 lbs. Boiler to be of the locomotive type, [illegible] in diameter by [illegible] long, for 160 lbs. working pressure. [illegible]

Hull is to be [illegible] and sent to Hudson Bay in knocked down shape, contractors furnishing men to erect and complete the tug at destination.

Return of Capt. Harrison's Certificate.

As announced in a previous issue the British Board of Trade decided to return the certificate of Capt. Harrison, who was in command of the s.s. Royal George of the Canadian Northern Steamships line, which was stranded near Quebec, Nov. 6, 1912.

The official information in regard to the matter is of a very meagre nature. The Board of Trade has issued a printed sheet giving in full the decision of the Dominion Wreck Commissioner in the matter, as delivered in Montreal on Dec. 11, 1912, and which was published in full in Canadian Railway and Marine World. Appended to the decision is the following note:—"On April 18, 1913, the Board of Trade decided to exercise the powers vested in them by sec. 474 of the Merchants Shipping Act, 1894, and to return to Capt. Harrison his certificate of competency as master, which had been suspended [illegible] months."

[illegible]

The Grand Trunk Pacific Railway's Dry Dock, Etc., at Prince Rupert.

Canadian Railway and Marine World for Feb., 1912, contained a very complete illustrated description of [illegible] for the G.T.P.R. at Prince Rupert, B.C., respecting the construction of [illegible] have been furnished recently with some [illegible] official information. The work under contract consists of rock cut and [illegible] the pier and platform work amounting to something over 200,000 sq. ft., or approximately five acres, and the foundation work for the buildings. On June 2 we were advised that nearly all the pile work had been completed, and that it was expected that the pier and platform work would be completed by the end of July, and that the foundations of all the buildings would be ready for the steel work by the end of September, but the steel is not due to reach Prince Rupert until Nov. 1.

The B.C. Premier announced May 5 that his Government had allowed space in the Songhees Reserve, Victoria, at the foot of Broughton St., for a site for the Dominion Marine and Fisheries Department, where a depot will be established.

List of Steam Vessels Registered in Canada during May, 1913.

Heretofore, Canadian Railway and Marine World has published throughout the year, complete lists of all vessels, of whatsoever nature, placed on the Canadian register, but owing to the large increase in the number of steamboats of small power, and of gasolene and other power driven launches, which it is now necessary to register, and to the growing demands on our space, power driven vessels of less than 10 n.h.p. will not be included in our published lists, in future. To a large extent, those which will be excluded, will not be engaged in commercial transportation, but will be utilized, more or less, for pleasure.

No.	Name	Port of Registry	When and Where Built	Length	Breadth	Depth	Gross Tons	Reg. Tons	Engines Etc.	Owner or Managing Owner
[illegible]	[illegible]	Sorel, Que.	[illegible] Sorel, Que.	79 8	17 2	9 2	97	36	32 n.h.p. s.s.	Minister of Marine, Ottawa.
[illegible]	[illegible] Passage	Liverpool, N.S.	1913 Liverpool, N.S.	[illegible]	14 0	[illegible]	36	15	19	Nova Scotia Construction Co., Sydney, N.S.
[illegible]	[illegible]	Sorel, Que.	[illegible] Sorel, Que.	79 1	17 0	8 2	89	[illegible]	25	Minister of Marine, Ottawa
[illegible]	[illegible]		[illegible] " "	104 7	[illegible]	7 9	262	131	[illegible]	
[illegible]	[illegible]		[illegible]	86 3	17 7	10 3	[illegible]	42	42	
[illegible]	J. F. Taylor (a)	Sault Ste. Marie	[illegible] Lorain, O.	[illegible]	[illegible]	24 1	3429	[illegible]	169	Algoma Central & Hudson Bay Ry. Co., Sault Ste. Marie, Ont.
[illegible]	[illegible]	Sorel, Que.	[illegible] Sorel, Que.	[illegible]	[illegible]	8 6	177	[illegible]	44	Minister of Marine, Ottawa.
[illegible]	[illegible]	[illegible]	[illegible]	193 0	[illegible]	12 3	[illegible]	763	77	Reid Wrecking Co., Sarnia, Ont.
131216	[illegible]	Sydney, N.S.	[illegible]	[illegible]	13 7	6 6	[illegible]	[illegible]	[illegible]	Atlantic Dredging Co., Louisburg, N.S.
[illegible]	Lac St. Pierre	Sorel, Que.	1901 Sorel, Que.	90 0	22 3	8 5	[illegible]	57	[illegible]	Minister of Marine, Ottawa.
[illegible]	[illegible]		[illegible]	[illegible]	21 7	[illegible]	213	[illegible]	[illegible]	
[illegible]	[illegible]		[illegible]	96 0	19 9	[illegible]	[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	Port Arthur, Ont.	[illegible] Wyandotte, Mich.	[illegible]	[illegible]	24 0	[illegible]	2010	161	[illegible]
[illegible]	[illegible]	Sorel, Que.	1905 Sorel, Que.	80 0	17 2	8 1	104	31	17	Minister of Marine, Ottawa.
[illegible]	[illegible]	[illegible]	[illegible] Morris Heights, N.Y.	94 3	15 6	[illegible]	[illegible]	[illegible]	16	C. B. Gordon, Montreal.
133907	[illegible]	Sorel, Que.	[illegible] Sorel, Que.	[illegible]	22 4	[illegible]	187	61	[illegible]	Minister of Marine, Ottawa.
[illegible]	W. C. Franz (c)	Sault Ste. Marie	[illegible]	346 0	48 0	24 1	[illegible]	2030	169	Algoma Central & Hudson Bay Ry. Co., [illegible]

(a) formerly [illegible]

List of Sailing Vessels and Barges Registered in Canada during May, 1913.

No.	Name	Port of Registry	Rig	When and Where Built	Length	Breadth	Depth	Reg. Tons	Owner or Managing Owner
[illegible]	B. C. L. No. 1	Vancouver, B.C.	Scow	1912 New Westminster	[illegible]	[illegible]	[illegible]	[illegible]	F. L. Buckley, Vancouver, B.C.
[illegible]	Contribution	Chatham, N.B.	Schr	1913 Caraquet, N.B.	[illegible]	[illegible]	[illegible]	[illegible]	G. Chenard, Caraquet, N.B.
[illegible]	[illegible]	Vancouver, B.C.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	G. H. Wailes, Vancouver, B.C.
[illegible]	[illegible]	Chatham, N.B.	Schr	[illegible]	[illegible]	11 0	[illegible]	[illegible]	A. Chiasson, Island River, N.S.
[illegible]	D. G. No. 7	Vancouver, B.C.	Scow	1911 Vancouver, B.C.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	E. C. E. XX			[illegible]	[illegible]	29 8	[illegible]	[illegible]	Evans, Coleman & Evans, Ltd., Vancouver, B.C.
[illegible]	Etoile d'un Mari[illegible]	[illegible] N.B.	[illegible]	1913 Lamek, N.B.	[illegible]	[illegible]	[illegible]	[illegible]	O. Noel, Lamek, N.B.
[illegible]	Marie Delphine			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	J. H. Savoie, Lamek, N.B.
[illegible]	[illegible]			1913 " "	[illegible]	[illegible]	[illegible]	[illegible]	F. Chiasson, Island River, N.B.
[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	Quebec, Que.	[illegible]	1907 Shelburne, N.S.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]ille, Que.
[illegible]	[illegible]	Lunenburg, N.S.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	Chatham, N.B.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]			1913 Shippigan, N.B.	[illegible]	[illegible]	[illegible]	[illegible]	J. Brideau, Shippigan, N.B.
[illegible]	[illegible]	Vancouver, B.C.	[illegible]	1912 Vancouver, B.C.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	Halifax, N.S.	[illegible]	1906 Tancook, N.S.	[illegible]	10 0	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	Chatham, N.B.		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	M. Poulin, Little Lamek, N.B.
[illegible]	[illegible]	Lunenburg, N.S.		1913 Lunenburg, N.S.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Official Statistics of Canadian Shipping.

The total number of vessels on the Canadian register for the year ended Dec. 31, 1912, was 8,380, measuring 836,278 tons, an increase of 212 vessels and 65,832 tons, as compared with 1911. There were 3,667 steamers with a gross tonnage of 641,225, and assuming the value at $30 a ton, the value of the net registered tonnage for 1912 was $25,088,340. The number of vessels built and registered in Canada during 1912 was 420, measuring 34,886 tons net register, which, estimated at $45 a ton gives a total value of $1,569,870. During the year, 241 vessels were removed from the register. It is estimated that 42,490 persons were employed on Canadian vessels during 1912.

The number and tonnage of vessels, according to Provinces, is as follows:

	Sailing ships and Steamships.	Steamships.	Gross tonnage of Steamships.	Net tonnage of Sailing Ships and Steamships.
Ontario	2,017	1,461	[illegible]	[illegible]
Quebec	[illegible]	519	[illegible]	[illegible]
Nova Scotia	[illegible]	359	[illegible]	[illegible]
British Columbia	1,376	988	[illegible]	[illegible]
New Brunswick	[illegible]	216	[illegible]	[illegible]
P. E. Island	[illegible]	23	[illegible]	[illegible]
Manitoba	95	85	7,893	6,096
Yukon	[illegible]	12	2,869	2,543
Saskatchewan	[illegible]	4	[illegible]	[illegible]
Totals	8,380	3,667	641,225	836,278

Ports of registry are distributed as follows: Ontario 38, Nova Scotia 21, New Brunswick 7, Quebec 6, British Columbia 4, Prince Edward Island, Saskatchewan and Yukon, one each.

The new vessels built and added to the register during the year, according to Provinces, are as follows:

	Vessels.	Tonnage.
Ontario	[illegible]	[illegible]
British Columbia	[illegible]	[illegible]
Nova Scotia	126	5,853
Quebec	[illegible]	5,744
Manitoba	1	[illegible]
Prince Edward Island	1	[illegible]
Totals	[illegible]	[illegible]

The ports having a net tonnage of 10,000 and over are as follows:

	Vessels. Sailing.	Vessels. Steam.	Net. Tonnage.
Montreal	[illegible]	322	[illegible]
Victoria, B.C.	140	[illegible]	74,017
[illegible]	[illegible]	290	60,151
Vancouver, B.C.	167	620	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible] N.B.	[illegible]	106	41,654
[illegible]	[illegible]	[illegible]	[illegible]
Lunenburg, N.S.	324	[illegible]	24,920
Halifax, N.S.	336	[illegible]	24,833
Windsor, N.S.	54	[illegible]	23,350
[illegible]	[illegible]	[illegible]	[illegible]
Kingston, Ont.	69	140	21,822
Midland, Ont.	6	27	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
Yarmouth, N.S.	260	[illegible]	14,451
Collingwood, Ont.	4	57	14,302
Parrsboro, N.S.	71	[illegible]	14,007
Sault Ste. Marie, [illegible]	[illegible]	[illegible]	[illegible]
[illegible] B.C.	81	137	10,842

Of the vessels removed from the register during the year, 117 were broken up, re-[illegible]

[illegible] Britain with its dominions and colonies (including Canada) stands first, with 12,580,488 tons, more than the combined tonnage of the next seven countries. Canada occupies [illegible]

Atlantic and Pacific Ocean Marine.

The Taconic Steamship Co., J. S. Lovell, Montreal, President, has increased the number of its directors from seven to eight.

During May, 65 ocean steamships arrived at Montreal with a combined registered tonnage of 445,098, as compared with 73 vessels, and 478,073 tons, in May, 1912.

The Canadian-Australian Line's s.s. Niagara arrived at Victoria, B.C., May 28, on her maiden voyage to the Pacific coast. The officers of the vessel were entertained by the Mayor and corporation, and the Board of Trade.

The Union Steamship Co. of New Zealand, operating the Australian-Canadian mail service between Australasia and Canada, has declared a dividend of 9 ½d. a share for the six months ended Mar. 31. This does not, however, apply to the 200,000 shares recently issued.

An order in council has been issued amending the portion of bylaw 45 of the Montreal Pilotage District, by providing for the increase of pilotage fees for seagoing vessels, either up or down, of 50c. for each foot of draught, making a total of $3 per foot draught.

The British s.s. Gerald Turnbull reported ashore on Gannet Rock ledges, near Yarmouth, N.S., at the end of May, was abandoned to the underwriters, June 2, all hope of saving her having been given up on account of local storms. She was on her second voyage, and was valued at $250,000.

The C.P.R. has purchased the s.s. St. George, which has been operated for some time between Fishguard, South Wales, and Rosslare, on the southwest coast of Ireland, by the Great Western Ry. of England. She is 2,456 tons gross, was built at Birkenhead, Eng., in 1906, and valued at about £90,000. She will be utilized on the route between Digby, N.S., and St. John, N.B.

The Union Navigation Co., of Toronto, a subsidiary of the Union Sulphur Co., of New York, has acquired the s.s. Harley, which was recently transferred from the British to the Canadian register, in the name of C. W. Harrison, London, Eng., as managing owner. She was built at Hartlepool, Eng., in 1906, and is screw driven by engine of 336 n.h.p. Her dimensions are: length 359.8 ft., breadth 50.2 ft., depth 26.4 ft.; tonnage, 4,171 gross, 2,707 register.

Referring to the report that the Canadian Northern Steamships, Ltd., was about to add to its Atlantic fleet, Sir William Mackenzie, President, is reported to have stated in Montreal, June 12, that for the past three or four years there had been a boom in shipbuilding in Great Britain, that all the shipyards were crowded with orders at present, and it would be necessary to wait until this state of affairs had subsided before the company could consider the question of ordering new vessels. It is reported that the company is laying a scheme before the Montreal Harbor Commissioners for better provision for its vessels there.

In connection with the collision last year between the C.P.R. Empress of Britain and the s.s. Helvetia, under charter by the Dominion Coal Co., by which the latter was sunk and lost, an appeal was recently made by the owners of the Helvetia, on the point of valuation, it being claimed that the value must be based on charter, which was until 1917. Judgment had been entered for £2,000 for loss of hire to the end of the 1912 season, and £65,000 for loss of the vessel, as against the claim of £24,320 loss of hire and £75,000 for the vessel. The Admiralty Court has referred the case back for a valuation to cover loss of hire for the remainder of the charter period. As both vessels were held to blame for the loss the damage was to be shared, the C.P.R. paying five twelfths.

The International Mercantile Marine Co.'s report for 1912 shows a combined surplus of all the component companies, of $3,787,911, after meeting all fixed charges and operating expenses, including repair, maintenance and overhaul charges. The surplus for 1911 was $4,509,269. On account of the Titanic loss during the year, the insurance fund shows a loss of $1,498,885, but with the surplus brought forward from the previous year, the fund shows a surplus for 1912, of $507,971. The report refers to the retirement of J. Bruce Ismay from the Presidency, and from the management of the Oceanic Steamship Co. (White Star Line).

The C.P.R. s.s. Empress of Russia, the first of the new steamships which the C.P.R. has added to its Pacific fleet, arrived at Vancouver, June 7, from Great Britain. She sailed from Liverpool, Eng., Apr. 1 with a large party making a tour of the world, entirely by the C.P.R. The route taken was by the Mediterranean and the Suez Canal, and it is announced that the whole trip was most successful, and passed off without accident. Her sister vessel the Empress of Asia, sailed from Liverpool, June 14, for Vancouver, by way of Maderia and the Cape of Good Hope, and is expected to arrive at Vancouver, Aug. 30. She is conveying another party on a round the world trip on the C.P.R., but by another, and longer route.

Maritime Provinces and Newfoundland.

The Nova Scotia Legislature has amended the Liverpool Marine Railway Co.'s act of incorporation.

It is reported in Sydney, N.S., that the Reid Newfoundland Co. is considering the question of removing its Canadian terminal there from North Sydney.

A powerful suction dredge for the N.B. Government was recently launched at St. John. She is of steel and is the largest steel vessel built at St. John, being 110 ft. long over all, and has 30 ft. beam.

The Sydney and Westmount Ferry Co.'s ferry boat Westmount, was launched at Westmount, N.S., June 4. She will carry about 100 passengers, and will be operated by gasolene engines.

On the arrival of the Canada Atlantic and Plant Line Steamship Co.'s new steamship Evangeline, at Charlottetown, P.E.I., on her first trip, June 6, the Board of Trade gave her an official welcome and presented H. L. Chipman, Manager of the company, with an address.

The s.s. Senlac, which has been lying up at Dartmouth Cove, N.S., since she was sold about two years ago, on account of the bankruptcy of her former owner, has been acquired for a 12 months charter in the mail service between St. Pierre, Miquelon and Halifax, N.S. This service has been performed during the past year, by the Newfoundland Produce Co.'s steamships Fogota and Sagona.

The Fredericton Steamship Co., the incorporation of which was announced in our last issue, has acquired the steamboat Hampstead, formerly operated on the St. John River and its tributaries, by the St. John River Steamship Co. She was built at Hampton, N.B., in 1893, and is screw driven by engine of 20 n.h.p. Her dimensions are, length 94 ft., breadth 17.7 ft., depth 7 ft., tonnage, 235 gross, 150 register. The company's office is at Fredericton, N.B. W. G. Clarke, Fredericton, is Presiednt, F. D. Swim, Doaktown, Vice President, and F. W. Porter, Secretary-Treasurer.

In response to an offer from England to establish a shipbuilding plant at Sydney, N.S., a reply has been sent to the effect that Sydney has already voted [illegible], and considerable time and money have been spent by the council in the matter without producing any results. While it may be taken for granted that the city will grant a large bonus to any company establishing a plant there, until a company expresses a definite intention to build there, the matter will not again be placed before the citizens for a vote.

The [illegible], owned at Glace Bay, under charter to the Dominion Coal Co., and carrying ore from Newfoundland to Sydney for the Dominion Iron and Steel Co., and coal to the St. Lawrence for the Dominion Coal Co., which went ashore near [illegible], Nfld., in May, and was subsequently abandoned to the underwriters, has been definitely abandoned by the latter, who made efforts to refloat her, without success, on account of storms. The wreck has been offered for sale as she lies on the rocks. She was insured for $320,000, and was practically a new vessel.

The construction of a marine railway dock at Burin, Nfld., is under consideration there, a local company for that purpose being in course of formation. It is intended to install a system similar to that now in operation at Harbor Grace, with the object of handling vessels which now have to go to St. Pierre, from Fortune Bay and Placentia Bay, for repairs. It is also considered likely that a similar plant will be built at Fortune Bay or Grand Bank. The Newfoundland Government recently passed an act by which it may grant aid in the construction of such works, by guaranteeing a return of 5% on the outlay for 15 years.

Province of Quebec Marine.

The name of the steamboat Massachusetts, registered at Montreal, no. 130927, has been changed to Compton.

The Sincennes-McNaughton Line steam tug Aurelie G., arrived at Sydney, N.S., from Great Britain, at the end of May, and immediately proceeded to Montreal, where she was overhauled and put into service. The voyage across the Atlantic occupied 16 days.

During May 879 permits were issued to vessels passing through the Lachine Canal, an increase of 298 over May, 1912. The number of vessel passages during May was 1,307, with a combined tonnage of 634,126; number of passengers, 1,923, and tons of cargo, 541,667, an increase of 246,726 tons.

It is anticipated that the new freight shed at the foot of St. Paul St., Quebec, will be completed by about the end of July. The freight building extension on the breakwater is about completed and the Commissioner's office building is progressing satisfactorily. Other work, in connection with the Louise docks and the bulkhead pier in the St. Charles River, are also progressing.

The estimated cost of the projected dam to be built in the St. Charles River at Quebec, is $2,500,000. It will be of concrete, 1,600 ft. long, an average height of 20 ft., with two locks respectively 450 and 350 ft. long by 65 ft. wide, in the entrance wall, each lock having 15 ft. of water on the sill at low water. Quinlan and Robertson, Montreal, are the contractors.

W. G. Ross, Chairman, Montreal Harbor Commission, returned to Montreal, June 10, after a tour of the terminal and grain handling facilities at the head of the lakes, and at other points. He is reported to have stated that he considered the present season would be the greatest in the port's history, but that a large quantity of grain would necessarily pass through [illegible] at Montreal.

The supplementary estimates recently passed by the House of Commons, include $1,000,000 for a dry dock to be located at Lauzon, Que., $1,000,000 for Quebec harbor, [illegible] for improvements on the St. Charles River, and $11,000 for a ferry landing wharf at Levis. The Minister of Public Works stated that the dry dock would be one of the largest in the country, that the contract would be let within the next few months, and that the work would probably be completed in about two years.

In connection with the vote of $1,000,000 for a dry dock at Lauzon, opposite Quebec, the Minister of Public Works stated in the House of Commons recently, that a site of about 32 acres is being expropriated, the value being something over $200,000. The dock would be a graving one, 1,150 by 125 ft. It will be one of the largest in the world, and it is anticipated that it will be completed within two years of the letting of the contract, which will probably be in July, or August.

The improvement work in the Quebec harbor, which the Quebec Harbor Commissioners propose to carry out, and on account of which an appropriation of $1,000,000 was made by the Dominion Parliament, recently, consists of the building of piers 1 and 2, composed of 38 solid close faced stone filled timber cribs, each 46½ ft. wide at the base, 20 ft. 10 ins. at the top and 45 ft. high, with concrete superstructure, with the necessary dredging in connection therewith, at an estimated cost of $1,778,230.

A United States shipping paper recently stated that "in connection with the various handicaps imposed upon shipowners trading to St. Lawrence ports, the matter of dry dock accommodation is most important; for some years past there have been many vessels trading to the St. Lawrence, there are 28 such vessels today of such beam that it is not possible to dock them for repairs in any dry dock in the St. Lawrence River." We might call our contemporary's attention to the floating dry dock installed at Montreal, which has a length over platforms of 600 ft., and over pontoons of 550½ ft., and a lifting capacity of 25,000 tons. This is the fourth largest of the type in the world, the largest being owned by Germany and Great Britain, respectively, in the order named. In a recently published list of the largest floating dry docks in the world, the U.S. does not appear.

Ontario and the Great Lakes.

It is announced that W. H. Dwyer Co., of Ottawa and Montreal, has completed arrangements for the erection of a grain elevator of 100,000 bush. capacity, with full equipment of drying and cleaning machinery on Island no. 2, Fort William.

The Toronto Insurance and Vessel Agency, Ltd., had reduced its capital stock from $500,000 to $50,000, by the cancellation of 3,000 shares of authorized, but unissued stock, and of 1,500 shares of issued stock recorded in the name of the Winnipeg Insurance and Vessel Agency, Ltd.

A proposal is being considered in Collingwood, to build a 1,000,000 bush. elevator there, at a cost of about $500,000. In connection with the financing of the scheme, it is stated that the intention is to issue 6% [illegible] bonds, with a bonus of one share of common stock for each share so [illegible]. It is also stated that Jas. Playfair, Vice-President and Managing Director, [illegible] Co., is interested in the matter.

[illegible]

[illegible] Fort William, Ont. [illegible]

The s.s. W. H. Dwyer was recently launched at Sunderland, Eng., for Forwarders, Ltd., Kingston, Ont., for use on the Great Lakes. She is of full Welland canal size, and is expected to arrive on this side and be in operation on the route early in July. Capt. W. Steeves, of the company's [illegible], went to England to bring over the new vessel.

The charter of the Long Sault Power Co., granted by New York State in 1907, for developing power on the St. Lawrence River, and which has been consistently combatted by the Dominion Marine Association and other similar interests, has been revoked by the Governor of the State on the grounds that its provisions were improvident, unwise and indefensible, both from an industrial and economical point of view.

The wrecking tug Premier, which recently passed through the Welland canal on its way from New York to Georgian Bay ports, and which was reported to have been acquired for operation as a passenger vessel by Inland Lines, Ltd., on the Georgian Bay, was in reality purchased by Jas. Playfair, for use by the Midland Towing and Wrecking Co., of which he is President and General Manager. The vessel has been generally overhauled at Collingwood.

The U. S. Government has decided to carry out the proposed widening of the Livingstone Channel entrance in the Detroit River by the removal of the westerly corner of the channel bank at the entrance to the new passage, beginning about 2,500 ft. above the apex of the Livingstone and Ballard Reef channels, and extending in a diamond shape to the upper end of the westerly dyke. The work covers an area of about 500,000 sq. ft., and will cost approximately [illegible].

The U. S. Lake Survey reports the levels of the Great Lakes in feet above tidewater, for May, as follows:—Superior, 602.13; Michigan and Huron, 581.05; Erie, 573.98; Ontario, 247.97. Compared with the average May levels for the past ten years Superior was 0.11 ft. above; Michigan and Huron, 0.33 ft. above; Erie, 1.22 ft. above, and Ontario, 1.14 ft. above. It was anticipated that during June, Superior, Michigan and Huron would rise 0.3 ft.; Erie, 0.2 ft., and Ontario, 0.15 ft.

The Toronto Harbor Commission has awarded the contract for dredging in connection with the water front development at Toronto, to the Canadian Stewart Co., Montreal. The plans and specifications call for the removal of approximately [illegible] cubic yards of material by hydraulic dredging, and borings indicate that 70% is sand and gravel, and [illegible] a mixture of sand, silt and clay. The estimated amount to be spent in harbor development is [illegible].

The Dominion Government has awarded a contract to R. Miller and Son, Toronto, for the lock gates on sections 3 and 4 on the Trent Valley Canal, to complete the outlet to Trenton on the Bay of Quinte, from Lake Simcoe. It is stated that the contract covers the construction and erection of 40 double lock gates, for about $250,000. The work is to be commenced at once, and it is anticipated that the entire contract will be completed by the fall of 1914. It is also announced that tenders will be called for shortly for work on the northern section of the canal from Lake Simcoe to the Georgian Bay, by the way of the Severn River. The total expenditure on the canal, to date, is about $11,000,000, and it is estimated that the expenditure of a further $5,000,000 will complete it and give a continuous waterway from Georgian Bay to Lake Ontario, of from 6 to 7 ft. deep.

Manitoba, Saskatchewan and Alberta.

The Dominion Parliament has voted $70,000 for the construction of approaches to the bridge over the dam at the St. Andrews lock and dam on the Red River, near Winnipeg.

The Winnipeg Harbor Commission has decided to ask the Dominion Government to grant $50,000 for the construction of docking facilities along the frontage on the Red River, to enable the Commissioners to cope with the congested traffic there.

The channel of the Red River, between Provencher and the Canadian Northern Ry. bridge, Winnipeg, is being dredged to obtain a greater depth of water, necessitated by the increased traffic. A wharf on the south side of Provencher is being built, and rails have been laid connecting it with the railways in the vicinity.

The Hudson's Bay Co. has appointed the following officers for its vessels for the current season. The second column gives the names of the captains, and the third those of the chief engineers:—

[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]

British Columbia and Pacific Coast Marine.

The Fraser River Navigation Co. announces a daily steamship service between New Westminster and Port Coquitlam, and in connection with it, will build a wharf at Pitt River.

J. E. Dalrymple, Vice President, G.T.R. and G.T. Pacific Ry., is reported to have stated recently, that the G.T.P.R. is preparing plans for the erection of an elevator [illegible] capacity, at Prince Rupert, B.C., so that the company will be in a position to handle grain through that port, on the opening of the Panama Canal.

In connection with the incorporation of the Vancouver Harbor Commissioners, it had been reported in Vancouver, that the [illegible] Pilotage Commission. This matter was [illegible] with the Minister of Marine, [illegible] Pilotage Commission [illegible]

A press report from England states that the appeal of J. H. Welsford and Co. against the decision of the High Court, in [illegible] Steamship Co. of British Columbia, has been dismissed with costs. On behalf of the appellants it was claimed that there had been misrepresentation by the previous owners, and on account of this the final payment by J. H. Welsford and Co. had been withheld.

Side Streams Navigation Co., Ltd., recently incorporated, as mentioned in a previous issue, has appointed the following officers for its steam vessels for the current season: Eva, captain, W. Bragg, chief engineer, R. R. Crosby; Pauline, captain, J. S. Raymond, chief engineer, E. A. Dixon; Vidette, captain, E. Gray, chief engineer, G. Waltenbough.

The Vancouver Harbor Commissioners have been incorporated by the Dominion Parliament, with jurisdiction over the harbor, which includes Burrard Inlet, with the North Arm and Port Moody, False Creek and English Bay, and all other tidal waters lying east of a line drawn from the Point Atkinson lighthouse southerly to the most westerly point of Point Grey. The corporation shall consist of three commissioners appointed by the Governor-in-Council, on the recommendation of the Minister of Marine, two of whom shall form a quorum.

In connection with press reports emanating from Vancouver, and mentioned in our last issue, to the effect that C. H. Nicholson, Manager, G.T. Pacific Coast Steamship Co., had recently visited Winnipeg for a conference with the management regarding plans for the construction of a steamship to be ready for service in 1914, we are officially advised that the reports were entirely unauthorized and are not correct, and that the management has no knowledge of any vessels to be built for the company, at present.

The Vancouver civic harbor and improvements committee of the Board of Trade harbor and navigation committee have appointed a special committee to consider the question of the appointment of an expert to advise on the needs of the city in regard to dry dock accommodation. It was stated that there were two companies in the field with applications for Government subsidies, and it was suggested that in addition to finding out the actual standing of the companies, the kind and size of dock best suited to Vancouver should be thoroughly discussed.

The North Fraser Harbor Commissioners have been incorporated by the Dominion Parliament, to control the North Fraser harbor, the limits of which are,—from a line drawn across the North Arm of the Fraser River in continuation southerly of the westerly boundary of New Westminster, thence down stream to the North Arm on both sides to the average high water mark, to lines drawn across the outlets of the North Arm into the Gulf of Georgia, but not extending further southerly than a point equidistant between the most southerly and the most northerly points of the western shore of Lulu Island, nor extending further northerly than Point Grey; including the adjacent waters of the Gulf of Georgia on Sturgeon Bank as far seaward as may be determined from time to time. The corporation is to consist of three commissioners, two appointed by the Governor-in-Council, and one, elected by a majority of four persons, one of the latter each being selected by the municipalities of Richmond, South Vancouver, Burnaby and Point Grey, for the purpose, and such commissioner shall be appointed for three years.

The act passed at the recent session of the Dominion Parliament, incorporating the New Westminster Harbor Commissioners, [illegible] the limits of the harbor shall extend from a line drawn north and south to each shore of the Fraser River from the average high water mark, on the eastern end of Manson, or Douglas Island, known as Point Sebastien, at the mouth of the Pitt River, thence down stream extending on both sides to lines drawn across the outlets of the Fraser River into the Gulf of Georgia, but not extending further northerly than a point equidistant between the most southerly and most northerly points of the western shore of Lulu Island; including the adjacent waters of the Gulf of Georgia on the Sandheads as far seaward as may be determined from time to time, but not including any portion of the North Arm of the Fraser River west of a line drawn across the North Arm in continuation southerly of the westerly boundary of New Westminster. The corporation shall consist of three commissioners, one appointed by the New Westminster City Council and two by the Governor-in-Council, the city Commissioner being appointed for three years.

The St. Lawrence and Chicago Steam Navigation Co.'s s.s. James Carruthers.

The s.s. James Carruthers, the launching of which, at Collingwood, May 22, was mentioned in our last issue, is of the single deck type, with estimated carrying capacity of 15,000 tons on a 19 ft. draught, and has been specially designed for carrying coal, ore and grain. She is of steel, constructed on the arch and web frame system, the holds being entirely free from pillars and other obstructions. There are 31 cargo hatches, each 38 by 9 ft., spaced 12 ft. centres, and she is built with complete double bottom with side tanks to main deck. The bottom tank is supported by a centre keelson and side girders of the depth of the tanks, and there are two collision bulkheads. The hold is divided into six compartments, and the double bottom into five compartments, and there is a transverse bunker bulkhead between the boiler and engine rooms. The spar deck stringer plating is supported by longitudinal channel girders.

The propelling machinery consists of triple expansion engines with cylinders 24, 40 and 66 ins. diar., by 42 ins. stroke, supplied with steam by three Scotch boilers, each 13 ft. diar., by 11 ft. long, at 185 lbs. pressure. The furnaces are equipped with Howden's forced draught, and there is a grate area of 45 sq. ft. to each boiler. Steam steering gear is placed aft on the main deck and is controlled from the pilot house by hydraulic telemotor. There is also an emergency steering gear and independent steam gear. The auxiliary equipment is of the most modern type, and there is a complete electric light installation for about 200 lights.

The officers' quarters are situated forward on the forecastle deck, and are rather more commodious than customary, on account of the greater size of the vessel.

Her dimensions are, length over all 550 ft. 8 ins.; length between perpendiculars 529 ft.; beam 58 ft., moulded depth 31 ft.

Rules of the Road.—An Ottawa press dispatch says:—"In connection with the alteration in the rules of the road designed to make navigation on the Great Lakes harmonize as between Canadian and United States shipping, the shipping interests have been advised that any changes will be effective only on the Lachine Canal and westward. Montreal harbor and the river eastward, and also the Maritime Provinces will not be affected. There has been opposition to any change which might lead to collision and resultant accident."

Canadian Railway and Marine World.

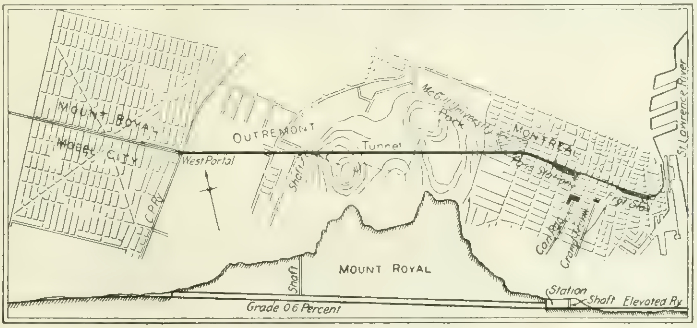
August, 1913.

Canadian Northern Railway Mount Royal Tunnel.

By S. P. Brown, M. Am. Soc. C.E., Chief Engineer, Canadian Northern Montreal Tunnel and Terminal Co., Ltd.

The C.N.R. is now operating about 5,000 miles of track in Manitoba, Saskatchewan and Alberta, besides its Eastern lines. It also has about 2,500 miles under construction that when completed in 1914 will make it a transcontinental system, with Vancouver, on the Pacific, and Montreal as its main eastern distributing point. When this work is finished it will be important to have proper terminal facilities already prepared in the main eastern point, and, with this in view, the Canadian Northern Montreal Tunnel & Terminal Co., Ltd., was incorporated to make the necessary developments in and about the city of Montreal.

Montreal has a population of about 600,000 and is the main eastern seaport during the busiest part of the year. The business and financial part of the city is largely concentrated in a narrow strip of land between the St. Lawrence River and Mount Royal, which is already so congested that the resident section is gradually spreading up and down the river and around the mountain into Westmount and Outremont. Mount Royal forms a very positive barrier between the people living back of the mountain and the business portion of the city.



Plan and Profile of Mount Royal Tunnel.

General Features of Project.

The natural location of the business centre of Montreal, between Mount Royal and the river, made the problem of entry at first appear complicated. To enter from either end of this strip meant a detour that was undesirable, and might have resulted in two separate stations for the eastbound and westbound traffic. A study of the topography and economic distribution of the city and island showed that a tunnel was the logical, as well as the economical, method of entry. It was found that the railways coming from the west could be brought from a convenient site for yards, shops, etc., near the Back River, to a junction point with the Quebec lines near the present Jacques Cartier Union Railway (G.T.R.) and thence at a very flat grade to a tunnel portal at its crossing with the C.P.R. belt line, about a mile from the Outremont yard. Thence the line will pass through a twin tunnel 3.25 miles long, down a 0.6% grade to a passenger terminal in the very centre of Montreal.

From the main passenger terminal the tracks may be extended across to the lower town on a viaduct at a level grade to connect with a viaduct along the harbor front, proposed by the Harbor Commissioners of Montreal, and a possible bridge across the St. Lawrence River. Such an extension would also include in the commercial part of the town an elaborate freight distributing depot, a department to which the C.N.R. is giving most serious thought at present. In connection with this freight department, large sorting and transfer yards are being developed back of the mountain and east of the city, where most of its shunting and mechanical part of the freight transference will be accomplished.

Back of the mountain, in the broad, gently sloping country, including some of the most fertile farms in Eastern Canada, the C.N.R. saw an opportunity for the site of a new city. With this in view, the Canadian Northern Montreal Land Company, Ltd., was incorporated to purchase this farming country and develop it as part of the general scheme of financing.

The New Model City.

The city of Mount Royal, or as it is locally termed, the "model city," is laid out on a rectangular plan, with four diagonal boulevards radiating from the railway station, which forms the centre of the town site. There is also a meandering boulevard connecting a series of parks and playgrounds distributed over the city, in general midway between the central park and the station site and the city limits. The land, consisting of a gently sloping plane, makes the situation ideal for drainage and sanitation. The streets will be paved principally with asphalt and macadam, the stone for which will be taken from the tunnel excavation. Street car service and lighting have already been arranged for with local companies in Montreal, which assures excellent service, and through trolley connections with Outremont, Westmount and Montreal proper are contemplated. The lots are being sold under very rigid building restrictions, as it is desired to produce a quarter of town for the better class of people who are rapidly being crowded out of the more desirable parts of Montreal, as well as for the city's rapidly growing population. A short multiple unit train service through the tunnel will bring the Mount Royal station within a very few minutes of the main passenger terminal in the city proper and trolley cars will tie the street car lines of the "model city" with those of Outremont and Montreal. A small freight yard near the west portal of the tunnel will serve for the delivery of local freight and express and for the manipulation of multiple unit trains during the rush hours. The entire terminal scheme is to be utilitarian from the Back River to the waterfront. The idea is to produce structures and developments that will be attractive to the eye and so designed and disposed as to be self supporting in themselves without the assistance of the ordinary railroad traffic.

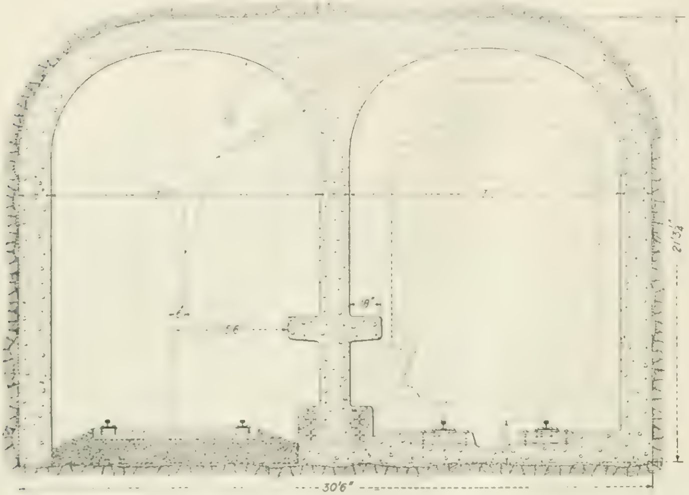
Tunnel History.

To the writer the most interesting part of the study of tunnels is its history. From the days of the cave man, through those of the Egyptians, Chaldeans, Romans and Europeans of modern times, the evolution has continued. The changes in the tunnel itself are small but the methods of excavation and construction have changed beyond recognition. The Lake Fucinus tunnel driven in the Abruzzi, during the reign of Claudius, was 6 ft. high, 10 ft. wide, and 3½ miles long. It took 11 years to build, and employed 30,000 men. To expedite this work some 40 shafts and inclines were sunk, some over 400 ft. deep.

As a comparison the present Mount Royal tunnel is practically the same length; the heading, however, is about 9 ft. high by 12 ft. wide, over 50% larger than the Lake Fucinus tunnel. It has one intermediate shaft about 240 ft. deep and another about 50 ft. deep at Dorchester St., which is at present acting as the eastern portal. The first heading was started on July 8, 1912, and since that time the shafts have been sunk and over 2 miles of heading driven on the tunnel line, besides more than ¼ mile at the shafts and in the terminal sites. The reason of this great difference in speed is method and equipment.

In the Lake Fucinus tunnel they used crowbars, chisels, picks, shovels, and possibly drills and saws with cutting edges of corundum. Most of the progress, however, was made by "fire setting," i.e., by building fires against the face of the heading until the rock was highly heated and then dashing cold water or acid, such as vinegar, on it to break the ground. Condemned criminals and prisoners were used in this work, as the death rate was terrific.

Compare this with modern tunnel prac-



Cross Section of Twin Tubes, Mount Royal Tunnel.

tice using electricity, compressed air and high explosives, which, combined with highly perfected machinery and carefully systematized forces, produce speed and economy that would have seemed incredible even a couple of generations ago, and one realizes how the usages have changed.

When the obstacles confronting those early tunnel diggers, however, are considered, we can but be filled with the sincerest admiration for the confidence, courage and perseverance that made the accomplishment of such great works possible. Their immature systems, methods and appliances required genius to produce success, and the stories of their early struggles form far more thrilling romances that one can find in the most visionary novel of today.

Mount Royal Geology.

Mount Royal is an intrusion of igneous rock forced upward through the original bed of Trenton limstone. There have evidently been several stages of eruption or intrusion, as both the limestone and main igneous bodies are broken and cut by a multitude of dikes and sheets of different and varied character, and evidently of later origin.

The two principal rocks to be encountered on the present line are Trenton limestone, slightly tilted upward toward the mountain, and essexite, which is the main intrusion of igneous rock. The Trenton limestone, at a considerable depth, is quite hard and crystalline, and except where silicious or too much cut up by dikes is a very good tunneling rock. At the city end the limestone was very soft and rather blocky for the first 2,000 ft., with occasionally earth in the heading roof. As the cover increased the rock became harder and more cut by dikes. At present it is quite hard and becoming slightly crystalline, the dikes causing the only difficulty in the tunneling. The essexite is very hard, but aside from this as a good tunneling rock. The most difficult tunnel rock is a volcanic breccia, which when cut by dikes is so badly broken and blocky that it is extremely hard to drill, does not shoot well, and will require almost continuous masonry lining. This is especially common near the junction of the limestone and the main volcanic intrusions.

Tunnel Location.

The location of the tunnel under Mount Royal was more or less established by the location of the passenger terminal in Montreal and the model city at the back of the mountain. It was, of course, known that the heart of the mountain was of hard, igneous essexite, as above described, which, with breccia, also showed outcroppings in a ridge near the western portal. While this lower ridge of hard rock and breccia could not have been avoided without seriously affecting the layout of the model city, a portion of the hard rock in the centres of the mountain could have been avoided had it been considered expedient.

The line finally adopted is the shortest one possible between the two main objective points that could be devised to avoid surface obstructions and take advantage of the geological formation, as far as it is able to be anticipated. It is believed that while much of the breccia and part of the limestone will require masonry lining similar to that required in soft ground, much of the limestone, inclined as it is to the present tunnel line, will require only a centre wall for safe support; in the essexite no centre wall will be required except for ventilation and purposes of safety in case of derailment or accident. This gives, economically, an extremely good tunnel line, which, with the exception of one curve under the McGill University grounds, is all on a tangent and at only sufficient grade to insure proper drainage.

Tunnel Cross Section.

A twin tunnel cross section has been adopted for three main reasons—economy in excavation and construction, ease and economy in ventilation, and safety in case of accident or derailment. The outside wall clearance is coincident with the clearance for new structures in the New York Central terminal work in New York and in excess of the clearance of the Pennsylvania Lines East of Pittsburgh.

A high headroom, almost the same as that of the Detroit River tunnel, was adopted, on account of the probability of a high voltage overhead contact circuit. The flattened three centred arch was adopted to allow for the sway of the pantograph and on account of the stratification of the rock where much of the lining will occur.

The walkway is made narrow, so that people will be forced to pass along it in single file, thus avoiding the danger of crushing and panic. The normal clearance at the walkway edge is 2 in. greater than that of the normal high passenger platform adopted in the terminal, which is somewhat greater than that allowed on the New York Central and Pennsylvania lines about New York. The walkway edge also coincides with clearance lines (outside of the platform) of the Penn-

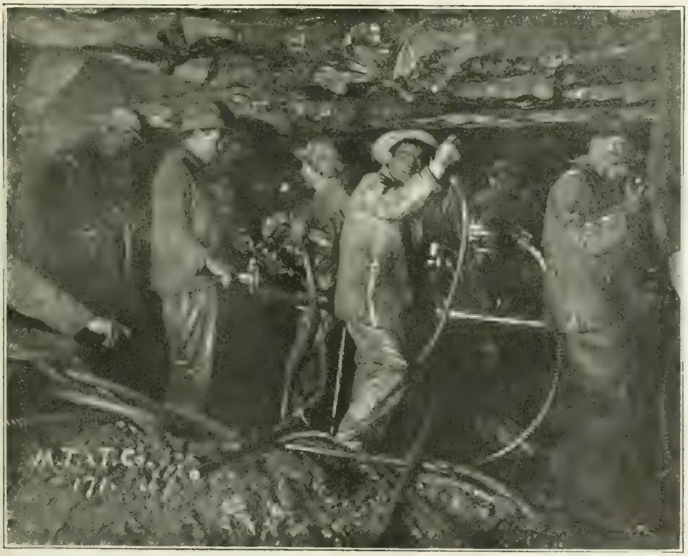
Mount Royal Tunnel—Breakup, Showing Jumbo Timbers in Heading.

sylvania Lines East of Pittsburgh, including the through lines between New York and Pittsburgh. Underneath the walkway is a continuous refuge niche, except at splicing chambers, where trackmen may sit on the duct bench at the bottom of the dividing wall and be absolutely protected from passing trains.

Excavation.

The method of excavation adopted is perhaps more European than American, although a close analysis would show it to be the resultant of several systems. In modern tunnel practice, lines of demarcation and sectionalism that were quite distinct only a comparatively few years ago are gradually becoming lost, so that an engineer is apt to select a combination of several systems which he considers wisest for his ground and structure. The things that stand out most sharply in all tunnels where great progress has been made and which are principally European in origin are: First, the opening heading is always comparatively small and usually in the bottom of the section; second, a horizontal bar is used to support the drills instead of columns; and, third, short rounds are drilled and shots are fired often. Every little economy in time is practised, and all delays, no matter how trifling, are analyzed and corrected, when possible. Workmen are given a bonus for extra progress above the specified minimum, and machinery, such as drill carriages, is used where it is found advantageous.

European engineers, like our Western miners, like to get under the muck, so that much of it falls into the cars by gravity instead of having to be lifted in. Sometimes this is accomplished by stoping, and sometimes by driving a top heading directly above the bottom heading. The one important point is to keep the bottom heading open for traffic at all times, so that the heading progress is never materially affected. The full size excavation can be carried on over jumbo timbers at as many places as necessary to keep up with the heading.



Mount Royal Tunnel—Heading. Observe Drills on Horizontal Bar and Water Attachment to Drills.

A bottom heading in bad ground, if possible, is even more desirable than in rock, for by this method the heading can be driven on rapidly and the timbering work and full sized section developed with care and without hurry in many places simultaneously along the line.

Mount Royal Tunnel—West Portal, Crushing Plant and Tipple.

A great many mechanical drilling, excavating and mucking apparatus have been devised, and in some cases they were found to work advantageously, but where the space is confined and delays serious, the laborer, with his pick and shovel, is usually employed. One man can handle a good deal of muck in his shift, shoveling off slick sheets into low cars. At present muckers in the Mount Royal tunnel heading are handling 15 cu. yd. of muck per man per eight hour shift.

Bottom Heading Method.

The method of excavation adopted in the Mount Royal tunnel is a bottom centre heading with break ups at intervals where the full sized tunnel section is developed. The heading is driven by the horizontal bar method. In one heading, where very hard rock is encountered, requiring extra heavy drills, a drill carriage is used with a mechanical muck carrier for loading the cars. In this drill carriage the drill bar is supported on a beam which can be extended 20 ft. ahead of the carriage over the muck pile and has also a vertical and lateral movement to accommodate the heading.

On the city end outside conditions are very disadvantageous. The city of Montreal has never had any previous experience in underground excavation, so that blasting that would be hardly noticeable in New York, for instance, is considered quite serious. For this reason under the city proper, where the cover was light, no blasting was allowed between 11 p.m. and 7 a.m.; the holes in the heading were reduced to 36 and 42 in. in depth, including the cut, and the powder was reduced to a mere "trace."

The effect of all this on heading progress was not so serious as might have been expected. While the holes were short, the rounds were fired so often that an average progress of about 17 ft. a day was maintained. In approaching the mountain, where 5 ft. cut holes could be used, the average progress was about 20 ft. per day.

Record Tunnel Progress.

During the month of May, just ended at this writing, as the rock cover had very much increased, shooting was allowed at night, which very much improved the heading progress. In this way, a total of 810 ft. of 8 x 12 ft. heading were driven in the 31 working days immediately following May 1. This, the writer believes, is the best tunneling record yet made in a hard rock heading.

A greater record than the above was made in the Loetschberg tunnel in Switzerland, where 1,013 ft. of 6.5 x 10 ft. heading were driven in one month through soft triassic limestone. An excellent record was also made last year in Arizona, where 799 ft. of 8 x 8 ft. heading were driven in 31 working days through granite porphyry sufficiently hard to drill well and in general stand without timbering. Neither of these rocks can be creditably compared in hardness with the diked Trenton limestone now being excavated in the Mount Royal tunnel. However, as the rock encountered in the Loetschberg tunnel was sufficiently hard to require the use of air drills, that progress of 1,013 ft. will undoubtedly stand as a world's record for a long time, and certainly stands as a monument to good tools, good management, and good men.

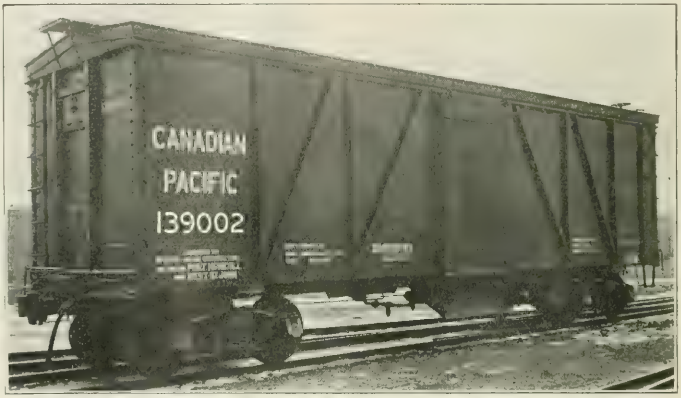
The rock in the Dorchester St. heading of the Mount Royal tunnel, while not so hard as it is back of the mountain, is a very good Trenton limestone, which makes an excellent concrete stone, being sharp and not too high in lime. All stone coming from the tunnel is being crushed and what is not used by the company is being sold for massive and reinforced concrete, principally in Montreal.

The break ups, as they are called, where the full sized tunnel is excavated, are opened at as many intervals as desired. This excavation is extremely cheap and rapid. In one break up about 200 cu. yds. are now being excavated per day with two shifts of drillers. Jumbo timbers are framed into the headings at the break ups, so that the heading traffic is never interfered with, and the bulk of the break up muck drops into the cars by gravity. It is to permit the use of a fairly broad gauge double track at these break ups that the Mount Royal headings are driven 8 to 10 ft. high by 12 ft. wide.

While so large a cross-section very materially reduces the progress of the headings driven each month, it very greatly increases the economy of further excavation and construction. Back of the mountain, where the very hard rock is encountered and the drill carriage is in use, the heading averages about 10 x 12.5 ft., and the May progress was 510 ft. in 27 working days. At the city end, where the record was made, it was permitted to reduce this to about 8 x 12 ft. in order to assist the progress. It is expected to remove most of the benches below the level of the jumbo timbers with a steam shovel.

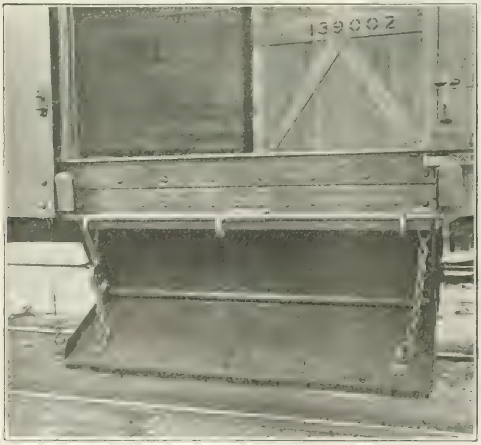
As this work is being done by Mackenzie, Mann & Company, Ltd., who also represent the Canadian Northern Ry., every opportunity for economy may be taken advantage of. The job organization covering both design and construction consists of R. Byers, General Superintendent, West; E. Duffy, General Superintendent, East; W. C. Lancaster, Electrical and Mechanical Engineer; H. T. Fisher, Tunnel Engineer; H. D. Robinson, Engineer of Design, and J. C. K. Stuart, First Assistant Engineer. The writer is managing engineer for Mackenzie, Mann & Co., Ltd., and Chief Engineer of the Canadian Northern Montreal Tunnel & Terminal Company, Ltd.—Engineering Record.

Hopper Bottom Grain and Coal Car Built for Canadian Pacific Railway.

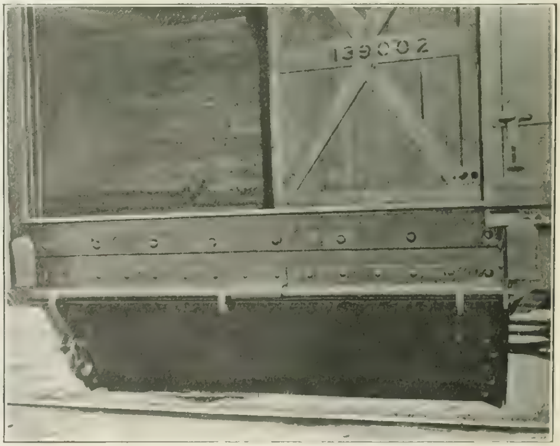


Hopper Bottom Grain and Coal Car for C.P.R.

Ever since grain has been handled in box cars, the construction of a suitable grain door has been one of the most difficult problems in car design, and up till recently it has remained the one unfinished part of the car. A satisfactory grain door is one that will hold grain as securely as any other part of the car body, is always there when required, will not be demolished in unloading, does not obstruct or decrease lading room when not in use, and is of reasonable first cost and low cost of maintenance. A grain car so constructed that there will be no loss that would be detected, will appeal to all persons who are in close enough touch with the handling of grain to be familiar with the loss that there has always been, and as other problems in railroading are being worked out and as railroading as a whole is becoming more efficient and refined, there will be a demand for a higher degree of efficiency in the handling of grain. Working to this end, the Canadian Pacific Ry. has built 200 Burnett hopper bottom grain cars, shown in the accompanying illustrations.

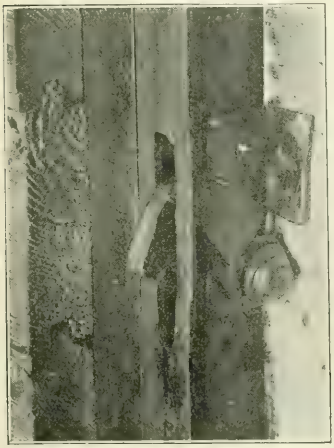


Car With Steel Hopper Open.



Car With Steel Hopper Closed.

There are several new features in this hopper door. The hinge is made by interlocking the edge of the hopper door and floor, making a continuous hinge, which, instead of weakening the edge, strengthens it the same as would the application of an angle, and instead of the load having a tendency to open the joint as with all other hinges, the load tightens the joint. The hopper door also differs from hopper doors previously constructed, in that it is hinged at the bottom and is almost vertical, and has no closing shaft, but is closed by hand, and secured by the shaft, on which are projections which engage the edge of the door at different points, holding it to a positively closed position. The ends of the hopper doors have flanges which shut into pockets or grooves formed by plates on the ends of the hopper. The whole construction of the hopper is so simple and strong that an inspection of the car convinces one that it is very unlikely that the hopper would ever become defective unless in a wreck, and the hopper not being subject to corrosion the same as open coal cars, should, barring wrecks, last the life of the car. The grain doors are formed by section of the floors at the doorway folding up against the door posts. As can be seen, these doors are thoroughly reinforced, are simple, and should not cost much more to maintain than the floor section at this point.


Grain Door Clasp.

One of the principal reasons for working out this car was to secure a car suitable for coal in one direction and grain in the opposite direction, so as to avoid, to a large extent, empty mileage while hauling other cars for coal. This refers more particularly to anthracite coal. In working this out, it seems that the solution of the grain door problem has been reached. In building, each hopper is filled with flaxseed and hammered, which is the most severe test possible, outside of water. They are all absolutely flaxseed tight.

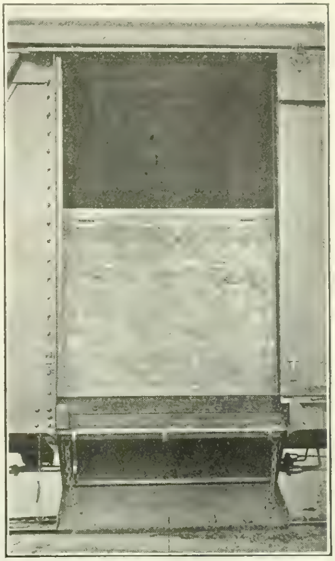
In dumping, the grain is thrown to the side, using the same elevator arrangement as the ordinary car. In dumping coal, it goes without saying that it is better to throw the load to the side rather than to the centre of the track and have the men crawl under for it. To unload a car of grain, the pin which holds the clamping shaft handle is driven out, which allows the hopper door to open and some 50% of the load runs out about as fast as the elevator can take it away, after which the floor door is unlatched and pushed down, and the remainder of the load brought out through the side door in the usual manner. This saves about one third of the time ordinarily taken to unload.

The arrangement increases the weight of the car about 800 lbs., compared with a car not fitted with grain door equipment, but when both cars are loaded with grain this difference is reduced the amount of the grain and fittings of the ordinary car.

The cost of maintenance of the ordinary grain door and fittings, including the usual nailing strips on the door posts, has been variously estimated at from $6 a year up. Approximating the additional cost of hopper bottom and folding grain door at $50 a car, the cost would be less with the hopper bottom car than with any kind of grain door that has been used in the past.

In addition to the saving on grain doors and fittings, it has been noted that where ordinary grain doors are used there is quite a force at elevators engaged in removing nails from the door posts and inside lining, etc., and getting the car ready for the load. This force of men would be almost entirely done away with in the use of this hopper bottom car. Short sections of Z bars are applied on the inside of the door post, above the folding grain door, so that when lading would extend higher than the folding grain doors ordinary boards can be sawn off and dropped in to carry the load to any height desired.

These cars are giving excellent satisfaction in service and are much sought for by the elevator men. The following are some of the advantages it would appear this car has over the ordinary car:—

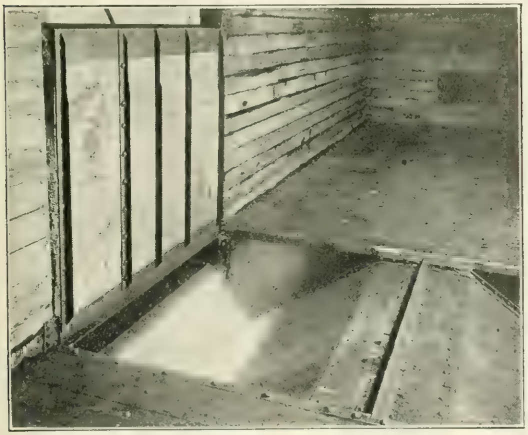

Grain and Coal Door Up, with Hopper Open.

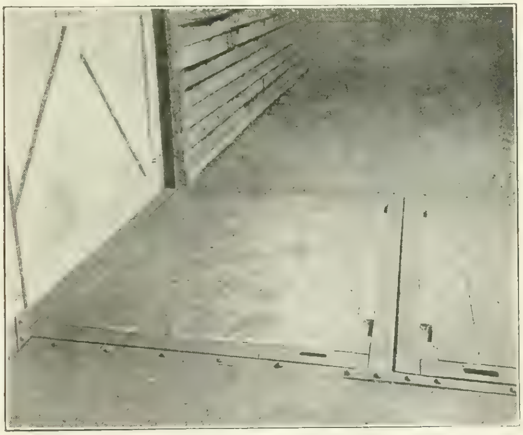
Combined first cost and maintenance less.

Car available for coal or any lading that can be dumped, as well as being absolutely the same for all other lading as the ordinary box car.

A most convenient grain door, which does not waste grain the same as grain doors have in the past, all of the grain that is loaded into the car being delivered at the other end of the run.

In addition to the reduced cost of maintenance, it saves inconvenience, room and cost of handling temporary grain doors at elevators, and cost of shipping temporary grain doors back to


Hoppers Open and Grain Door Up.


Interior of Car with Grain Doors Down.

point of loading, also cost of force of men at loading points removing nails and fitting cars for grain.

Patents are being taken out by R. W. Burnett, General Master Car Builder, C.P.R., Montreal. The car illustrated was built by the Canadian Car and Foundry Co.

Canadian Northern Railway Pacific Type Locomotives.

The Canadian Northern Ry. recently had delivered four Pacific type locomotives of the J-1-a class, the first of this type ever used by this road. They were built by the Montreal Locomotive Works, and were mentioned in Canadian Railway and Marine World at the time the order was placed. For the most part, the design is standard, but as there are some features differing from usual practice, they are here outlined. The general dimensions are as follows:—

[illegible]	[illegible]
[illegible]	[illegible]
Boiler—	
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
Tubes—	
[illegible]	[illegible]
[illegible]	[illegible]
Wheel base—	
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
Weight—	
Locomotive in working order	216,000 lbs.
Tender in working order	142,000 lbs.
Locomotive and tender, total	358,000 lbs.
On leading truck	41,100 lbs.
On drivers	136,400 lbs.
[illegible]	[illegible]
Fuel	Bituminous coal.
Heating surface—	
Tubes	2,296 sq. ft.
Fire box	180 sq. ft.
Total	2,476 sq. ft.
Grate area	48.2 sq. ft.
Maximum tractive power	31,100 lbs.
Factor of adhesion	4.38
Tender capacity—	
Coal	12 tons.
Water	6,000 Imp. galls.

The general arrangement presents nothing out of the ordinary, following pretty closely the lines of the Montreal Locomotive Works standard design in appearance. The principal point of variation in general design is in the arrangement of driving wheels. It will be noted that 69 in. wheels are called for, but the design has been worked out with the expectation of at some future date using 75 in. drivers, the wheel base being such as to permit of this rearrangement.

The boiler is of the extended wagon top design, possessing no features of consequence other than the manner of cross bracing of the steam space above the firebox by pin connected rods from side to side of the shell immediately over the fire sheet. This acts as a positive assurance against the boiler bulging outwards. The steam dome has a 20 in. opening at the top for entry in case of internal inspection, the throttle being so designed as to permit of this without the removal of the stand pipe. The tubes are of seamless steel, and the staybolts are of staybolt iron. Four rows of Tate flexible expansion stays are used on the firebox. In the firebox, there is a brick arch, supported on studs from the sides of the firebox.

The front end arrangement of the locomotive is of the Master Mechanics' standard design, with double petticoat pipes. The superheater in this end is of the Schmidt fire tube type A, comprising 25 units running back through the 5⅜ in. flues.

The cylinders are of the latest design, employing outside steam pipes running down from the superheater headers, a design that has met with general adoption within the last two years. Piston valves as is usual with superheated steam are employed. Over the valves is a by pass valve of what is generally termed the Pennsylvania type. It is claimed to be the best type in use owing to its positive action. Both the Baltimore and Ohio Rd., and the Pennsylvania Rd. use it as a standard. The cylinder cocks are of the double lift valve type. Instead of using a ball joint, with a ring at the mud ports in the bottom of the barrel, a 4 in. plug is used, and it is claimed that no trouble is experienced from leaking, and it is easier to remove and maintain. Both cylinders and valves are bushed. The piston valves are 14 ins. diameter.

The valve gear is of the Walschaert type, in one of the latest designs, comprising an outside slab frame for the outside link support, carried from the locomotive frame both front and rear. A light frame ladder is supplied on both sides of this supporting slab frame for internal inspection of the forward running gear and the oiling of the links. The valve stem is of the self centring type, supported directly from the valve chamber cover, and the front end of the piston rod is carried on a slipper in guides on the front end of the cylinder, both these features being recent practice.

The connecting and side rods are of open hearth steel, as are also the crank pins. The crank pin collars are secured by a lock nut and split pin through the crank pin, which is standard C.N.R. practice. All the grease cups are forged solid with the rods.

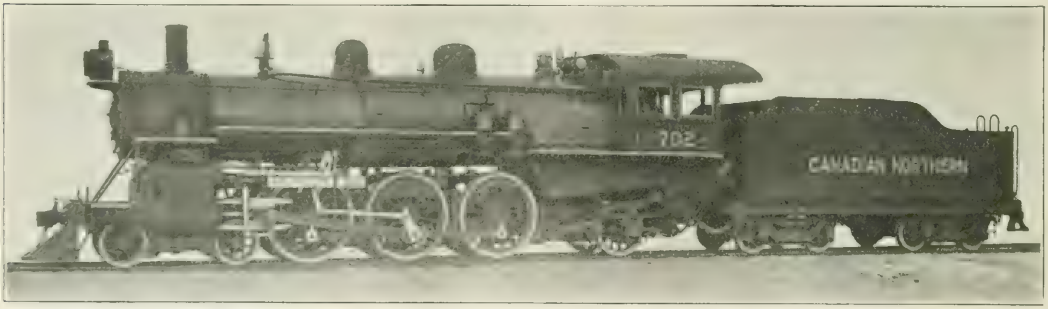
The frames of the locomotive are cast Vanadium steel, to the front end of which is attached a cast steel bumper carrying a standard C.N.R. Sharon coupler. The pilot is of the C.N.R. standard, built up of oak, and fitted with an iron band shrunk on tightly.

The driving wheel centres are of cast steel, with bronze hub liners, and carrying supplementary counterbalance weights. The driving tires are of steel, 3½ ins. thick and 5½ ins. wide, and lipped on the outside to prevent their moving in. All six drivers are flanged. The axles are of hammered open hearth steel, with the main journals 9½ by 12 ins., and the others 9 by 12 ins. The driving boxes are of cast steel fitted with brasses, but with no babbitt in the bearings, and fitted with grease cellars. The springs of the spring system are of the Canadian Steel Foundries make.

The locomotive truck wheels are 33 ins. diameter, with cast steel spoke centres, with open hearth steel tires 3⅛ ins. thick by 5½ ins. wide, fitted with C.N.R. standard retaining rings rivetted in place. The axles are of hammered open-hearth steel, with journals 5½ by 12 ins. The trailing truck wheels are 45 ins. diameter, with 38 in. cast steel spoke pattern centres, and have iron tires 3½ ins. thick and 5½ ins. wide. The axles are of hammered open hearth steel with journals 8 by 14 ins.

The cab is of the C.N.R. standard type, which can be renewed in parts in a simple manner. The runboards are of diamond surface steel plate with an angle iron edge. The sanders are piped to the front of the main drivers. The headlight has an 18 in. round case Ross type reflector, and a Pyle type E generator supplied with steam through copper pipes run under the lagging. Auxiliary lighting is from C.N.R. standard oil lamps.

The ashpan arrangement is of the C.N.R. standard, which was described in these columns recently. The firedoors are of the Franklin automatic type. The lagging on the boiler is H. W. Johns-Manville fire felt, 2 ins. thick. The jacketing is of no. 22 planished steel. The bell ringer is of the Taylor and Arnold type. There are three 3 in. open pops. The boiler feed is from a no. 10 Ohio injector on the left side and a no. 11 on the right. The bearing metals throughout are the Canadian Bronze Co.'s make. The steam heating is on the Gold system, and all the metallic connections are through flexible hose. All boiler fittings are connected to the boiler with the C.N.R. standard 12 threads per inch. The air signals are on the Westinghouse schedule L, and the air brakes are all Westinghouse, with two 9½ in. pumps



Canadian Northern Railway Pacific Type Locomotive, J-1-a Class.

on the left side. A no. WM-2 and WD are applied to the locomotive truck and all the drivers, but with no braking on the trailing truck. All gauges have a double spring crank movement graduated to 300 lbs.

The tender tank and frame are of the C.N.R. standard construction described in these columns recently. The trucks are also of the standard C.N.R. equalized pedestal type, with cast steel bolsters and Wood's roller side bearings. The truck wheels have 33 in. diameter cast steel plate centres with tires, 2⅞ ins. thick and 5½ ins. wide. The axles are of open hearth hammered steel with 5½ by 10 in. journals.

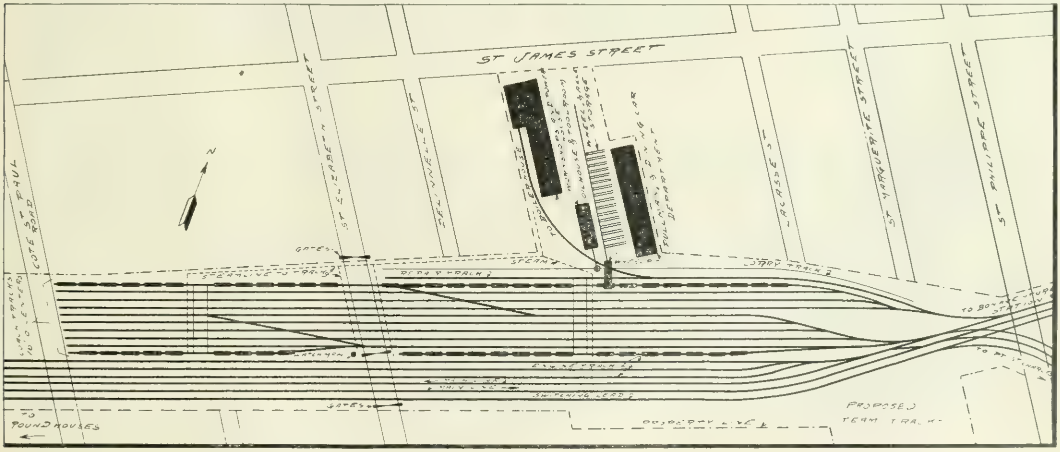
We are indebted for the above information to A. L. Graburn, Mechanical Engineer, C.N.R.

Grand Trunk Railway New Passenger Car Yards at Montreal.

By A. Stoikowitz, Car Department, Grand Trunk Railway.

In order to keep steps with the enormously increased passenger traffic of the G.T.R. and with the advent of the G.T. Pacific Ry., it was found necessary to abandon the old facilities at Bonaventure station, Montreal, and to build a separate passenger car yard and cleaning plant for this purpose. This plant is constructed along highly efficient lines, great care having been taken to reduce the cost of operation to a minimum, and many mechanical devices have been substituted for hand labor wherever it was found advisable. The location, two miles west of Bonaventure station and adjoining the Turcot locomotive houses, is very ideal. The yard has a capacity of 180 cars, is 2,400 ft. long and extends from St. Marguerite St. to Cote St., Paul Road. It consists of 10 car tracks, spaced 16 ft. centres, and one repair track, the latter running next the workshops from La Casse St. to St. Elizabeth St. Cleaning platforms are provided between all the tracks, 6 ft. wide by 10 ins. high, being entirely free from any obstructions, such as poles, etc. These platforms are tapered at St. Elizabeth St., and at two crossings or midways, which are 20 ft. wide, one of them being located directly opposite the workshops, the other halfway between St. Elizabeth St. and Cote St. Paul Road. By means of these crossings, and in connection with the lead tracks, the yard is subdivided into eight sections, which arrangement permits an increased output with the least possible handling of cars.

General View of G.T.R. Passenger Car Yards, Montreal.



Plan of Grand Trunk Ry. Passenger Car Yards at Montreal.

The drainage system consists of a 15 in. main line running through the centre of the yard, connecting 34 branch lines 8 ins. in diameter, and spaced 150 ft., throughout the yard; the main line being connected to the city sewers at three points. There are three independent water mains which supply the great amount of water used for cleaning purposes, one of them supplying the boiler room and workshops. All the platforms are provided with water outlets, 120 ft. apart; the pipes and fittings used being extra heavy.

Owing to the fact that day and night shifts have to be maintained for cleaning cars and making up trains, the lighting system has been made specially effective. It consists of 60 Westinghouse arc lights of 2,500 candle power, which are suspended 18 ft. above the tracks from ½ in. galvanized wire cables, crossing the tracks at 100 ft. intervals. Each cable has a span of 185 ft. and carries three lamps, which are controlled separately by means of a switch box, secured to the poles on one side of the yard. The poles are 26 ft. high, and consist of a strut and brace made of 80 lb. rails, imbedded into a solid concrete foundation 6 ft. square by 6 ft. deep, the brace being secured to the foundation by means of a 1½ in. foundation bolt. It was found that these poles were quite inexpensive and strong enough to withstand the enormous tension stresses of a span of 185 ft. The lamps are staggered throughout the yard and give an evenly distributed light of great brightness.

The steam and compressed air lines are carried overhead on trestles from the power house to the midways and St. Elizabeth St., respectively, whence they are carried under ground to supply each track with steam and compressed air. The steam main line starts with a 7 in. pipe at the boiler house, and graduates down to 3½ ins. at its end, the four distributing mains under ground being controlled separately, graduate down to 2 ins. at the last outlets, where automatic steam traps discharge the condensation. The main line is of extra heavy pipe, covered with 2 in. asbestos sponge felted pipe covering and provided with expansion joints every 100 ft. The compressed air line carries a mean pressure of 80 lbs. per sq. in., starting with 4 ins. at the power house and graduating down to ¾ in. at its last outlet. Compressed air is used extensively for testing air brakes, cleaning seats and carpets, operating air hoists, wheel pit, etc.

The workshops, power house, etc., located in a separate yard in close proximity to the tracks as indicated in the general plan, are solid brick structures with concrete basements. The boiler room is 90 by 60 ft., carrying five return flue steam boilers, having a combined capacity of 750 boiler h.p. There is room for three additional boilers for future enlargements. A separate elevated track enters the boiler room and inclined chutes take the coal directly to the boilers. A grated ash pit and an automatic conveyor dispose of the ashes into gondola cars.

Yard in front of Workshops and Power House, G.T.R. Passenger Car Yards, Montreal.

It is estimated that the number of cars to be heated will not exceed 120 at a time. Figuring the water of condensation to be approximately 70 lbs. per car and per one half hour preheating time at an outside temperature of zero, and allowing an evaporation of 30 lbs. water per horsepower hour, the necessary boiler horse power for heating purposes will be

$$\frac{120 \times 2 \times 70}{30} = 560 \text{ boiler horse power.}$$

The workshops in connection with the boiler room have a combined length of [illegible] ft. by 62 ft. respectively, [illegible] ft. outside dimensions, and contain separate rooms for the electricians, carpenters, upholsterers, painters, plumbers and airbrake men, a dining room for the car cleaners, a big storeroom, offices, lavatories and bathrooms.

The engine room contains an Ingersoll-Sergeant duplex air compressor, with a capacity of 1,670 cu. ft. of free air per minute, at a pressure ranging from 70 to 100 lbs. a square inch, and also contains different switch board panels and a dynamo for charging batteries. The exhaust steam of the air compressor is utilized in winter for heating the buildings, the condensation thereof being carried back to the boiler feed pumps. The basement underneath the workshops, being only 3 ft. beneath the yard level, is used as a blacksmith shop, cleaning and charging place for batteries, and as a storeroom for heavy and bulky material; an air hoist connecting same with the storeroom above.

The oil house is constructed entirely of concrete and fire proof materials, and contains an oil tank 30 ft. long, located underground in a concrete pit, and covered with a reinforced concrete floor. This tank is divided into four compartments and is capable of storing 2,950 galls. Galena oil, 1,000 galls. lamp oil, 1,000 galls. coal oil and 600 galls. of signal oil. It is equipped with gauges, safety valves and heating coils, compressed air being used to discharge the oil into buckets. A general tool room at one end of the oil house is for storing heavy tools of car repairers, etc.

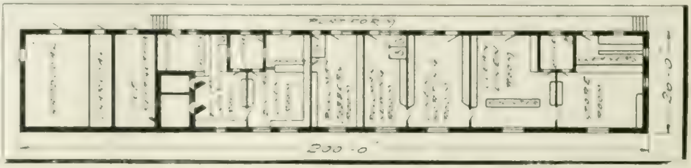
A separate building accommodates the sleeping and dining car departments and storage rooms for hard coal, charcoal and ice. This building is 200 by 26 ft., sanitary in every respect and equipped to handle the greatest amount of business. The dining car department is thoroughly equipped with lockers, shelves, counters, etc., and an office with glass partitions, located to permit a perfect supervision; the storerooms have concrete floors, all the woodwork and lockers are painted white and enamelled. A refrigerator of an approved type, located in one of the store rooms, is 18 by 14 ft., having a separate compartment for dairy products. It is iced from the ice storage by means of an air hoist.

The sleeping car department consists of a jobbers' room, sewing room, linen sorting room, clean linen and storerooms, and an office and a dining room for cleaners. All the rooms are equipped with lockers, shelves and counters, the lockers in the clean linen room being painted white and enamelled.

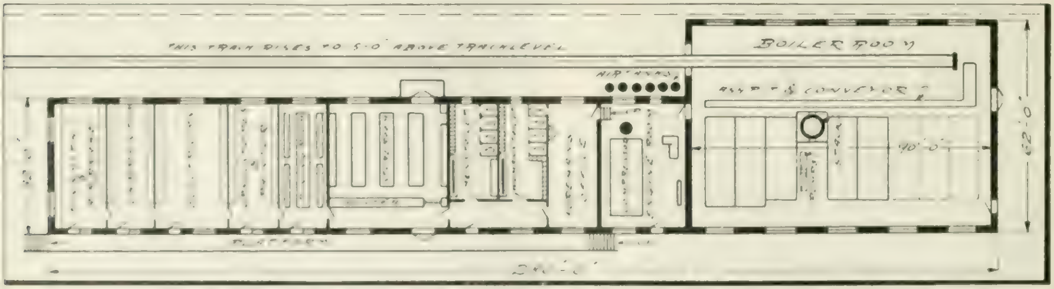
The yard between the buildings is used for wheel and axle storage. Air hoists and runways for loading and unloading them are in course of construction, also a pneumatic wheelpit, which is automatic in its action.

A more efficient method than fumigation has been adopted for disinfecting the cars from time to time, which will be accomplished by the liquid spray method. Pure carbolic acid is used as a disinfectant, with a co-efficient of 20, a dilution equivalent to 1 in 500. Practical experience has shown that 10,000 approximately five cents. There is a complete absence of objectionable odor by using a disinfectant with such a high co-efficient and the results obtained are highly satisfactory.

This plant was designed by the G.T.R. sq. ft. can be disinfected at a cost of Car Department under the direction of its Superintendent, Jas. Coleman, and the work was carried out by the Bridge and Building Department.



Floor Plan of Dining and Sleeping Car Departments, G.T.R. Passenger Car Yards.

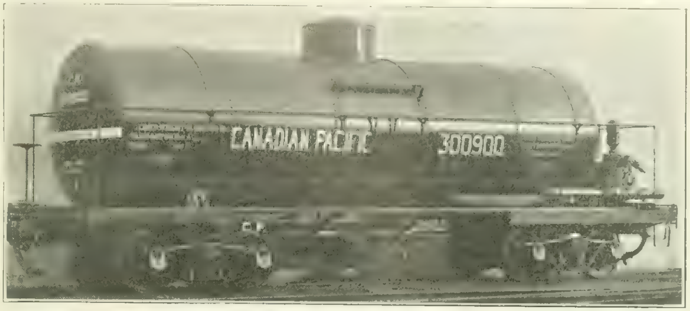


Floor Plan of Workshops and Power House, G.T.R. Passenger Car Yards, Montreal.

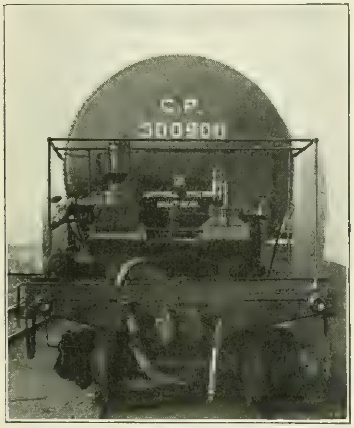
Canadian Pacific Railway Fire Fighting Cars.

A novel departure has been made by the C.P.R. in the construction of a couple of tank cars specially equipped for fire fighting. In general, they are of the standard M.C.B. tank car construction. Two cars have been built, as they are intended to operate in pairs. Apart from the end arrangement of the auxiliary equipment, they are identical in construction. Each car carries a tank of 8,428 imp. galls. capacity. On the end of one car there is a 7 x 10 x 10 in. duplex fire pump, using steam from the locomotive boiler. The corresponding end of the other car has a rack construction on which can be carried 6,000 ft. of 2½ in. fire hose.

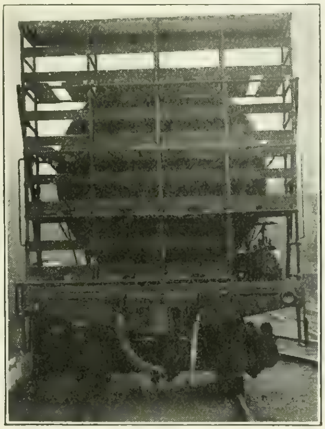
The tanks are 92½ ins. diameter by 28 ft. long, made from 5|16 in. plate. Over the centre is the usual dome, 44 ins. diameter, inside of which is a 23 in. opening, a light metal ladder being provided inside for entry purposes. Inside the dome, there is a valve wheel, connected with a 6 in. valve in the bottom of the tank, with the usual outlet below. The centre sill of the car is built up of two 15 in. 55 lb. channels, these comprising the whole longitudinal sill construction of the car, except for the reinforcements for the body bolsters over the truck. Draft gear is attached to the ends, housed in a pressed steel end sill. The car is designed for a weight capacity of 100,000 lbs., so standard 50 ton trucks are employed.



C.P.R. Fire Fighting Tank Car, With Duplex Pump.



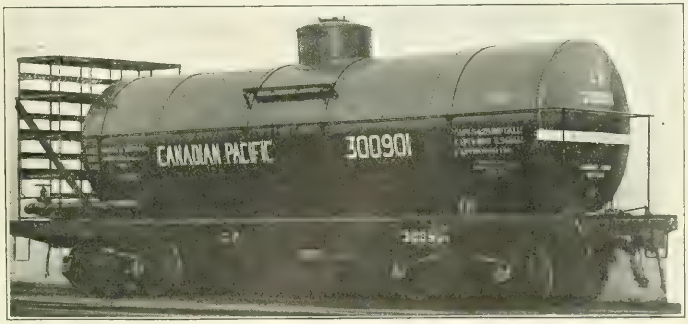
Pump on Fire Fighting Tank Car.



Hose Rack on Fire Fighting Tank Car.

The tanks are placed a little further to one end than is usual, the platform space thus provided at the open end being used in the one case for the pump, and in the other for the hose racks. In both tanks, the suction is through a 6 in. pipe near the bottom and to one side of the centre line, forming a U bend, the open end of which drops down to within an inch of the bottom of the tank. The suction pipe, from the point it leaves the tank, passes along the side of the tank on the deck, to the open platform ends. In the rack, this terminates in a capped end, to which can be connected a short section of 6 in. rubber hose, supplied with the car, for connecting up with the pump car. In the pump car the connections are somewhat similar, with a capped end pipe, but this short length of pipe from the tank to the capped end contains a 6 in. T connection to the pumps. In both cars the connecting length has a globe valve.

The hose racks on the rack car are made up of 1 in. extra heavy piping, made into sectional openings, 27 ins. square. There are 16 of these openings, 40 ins. deep, in which the rolls of hose are placed on edge, in rolls up to 27 ins. diameter. The accommodation is for 6,000 ft., which can be connected up to the pump.



C.P.R. Fire Fighting Tank Car, With Hose Rack.

The two cars were built to the C.P.R. designs by the American Car and Foundry Co., and are in service in the operating department, being located at Brownville Jct., Me.

Customs Regulations on the Importation of Foreign Repair Parts. The importance of conforming to Customs regulations when shipping repair parts from U.S. lines into Canada is a most vital question with the store and car departments of the different Canadian lines, as, on account of the absence of properly vouched for invoices accompanying the parts, they are usually held pending correspondence from the Canadian consignee to advise the U.S. consignor of the difficulty. In the meantime, the car is held on the bad order track, where it is not only freed from the per diem regulations, but also blocks up necessary home repairs. This subject has been treated in a thorough manner by L. E. Thomson, Storekeeper, Canadian Northern Ontario Ry., in a paper at the Railway Storekeepers' Association Convention in Chicago recently. In his paper, all the considerations involved in the resulting delay are dwelt upon, and the necessary procedure in forwarding the parts so as to avoid this delay is explained. It is to be hoped that the presentation of the paper will have the desired effect, as a proper following of the Customs regulations will mean a considerably increased repair track capacity for Canadian lines.

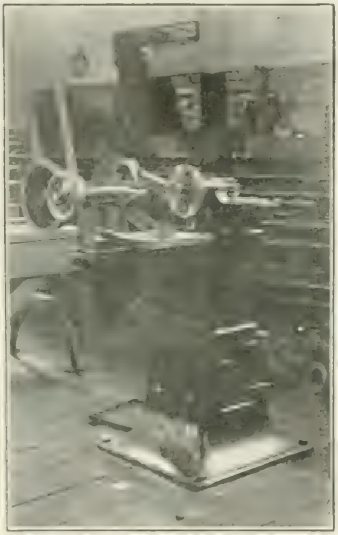
Sale of Return Tickets on Trains.—The Board of Railway Commissioners has asked railway companies to state whether their conductors have instructions to sell round trip tickets to passengers boarding trains at flag stations, or at stations where no agents are on duty immediately before the departure of trains therefrom.

Railway Mechanical Methods and Devices.

Grinding In Machine at Grand Trunk Railway London Shops.

The air brake department of the G.T.R. London shops has a machine for grinding in valves such as angle cocks, etc., made to their own design. The construction is to be seen in the accompanying illustration. Others of the same design are said to be in use at other points on the system, no doubt copied from this.

The frame closely resembles that of a small vertical miller. To the rear, there is a 3 step cone pulley, carried on a shaft in bearings. There is a disc crank at the other end of this shaft at the furthest point to the rear in the machine, as shown by the illustration. This crank has a connecting rod attached to a short section of rack, guided in ways on the top of the machine frame as noted to the right. A pinion carried in a bearing to the left and above the rack, connects to a small faceplate on the front end of the pinion shaft.



Machine for Grinding in Valve Seats

A knee from the front of the machine frame has a channelled upper surface, carrying a light tailstock, the centre of which is in line with that of the faceplate right up to which it can be moved on the ways.

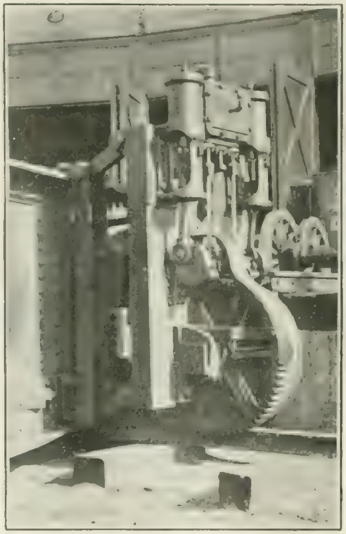
The valve to be ground to a seat is placed in the machine between the two centres, being driven from the faceplate. The seat, as in the case of an angle cock, [illegible] up to the work by the operator, there being [illegible] cock, and alternately relieving the valve from the seat to allow the spreading of the oil and emery introduced at intervals by the operator.

The revolving crank disc at the rear [illegible] rack, which in turn revolves the pinion [illegible] This motion keeps constantly reversing, making an ideal grinding in movement.

Standard Turntable Motor on Grand Trunk Pacific Railway.

A standard type of turntable motor is being introduced along the G.T.P.R. The accompanying illustration of the installation at Rivers, Man., is typical.

The operating medium is compressed air. Twin cylinders, with the air chest between, connect through connecting rods of good length, with a crank shaft through disc cranks, the valves operating directly from this shaft in the usual manner. This crank shaft carries a small pinion, meshing with a large gear located on the inner side of the turntable rail. Integral with the large gear is a wheel of the same diameter, running on the turntable rail. Both wheel and gear are carried on a shaft carried in bearings on the frame to the rear.



Standard G.T.P.R. Turntable Motor.

The whole operating mechanism is carried on a frame, which is a heavy iron casting, held to the turntable by four links, giving free vertical movement to the weight and mechanism. The weight is of such proportions as to give sufficient adhesive force for the air motor to move the turntable around, even if the locomotive is not exactly centred.

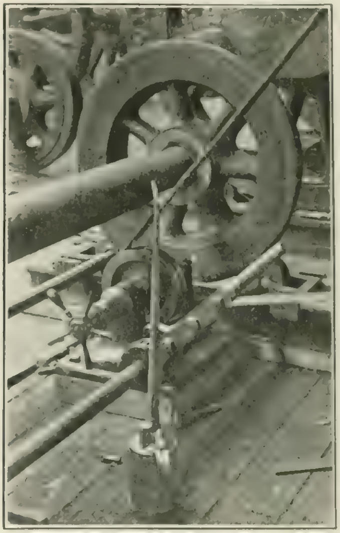
The particular advantage of this outside motor arrangement lies in the fact that the locomotive does not require to be so accurately spotted. When operated by hand power, the locomotive must be accurately centred. With a power mechanism attached directly to the turntable frame, the locomotive must be tilted slightly in that direction to obtain the necessary adhesion. With a mechanism flexibly connected in the manner in which this one is attached, such precautions are unnecessary.

The motor is operated from an air handle at either end of the turntable, a small operating shaft, along the top of one of the turntable girders, connecting the two handles.

Drilling Retaining Rings at Grand Trunk Railway Stratford Shops.

Of the large number of useful labor saving appliances in the G.T.R. machine shop at Stratford, Ont., the one illustrated herewith is one of the best. It is a machine for drilling out the old rivets that hold the retaining ring for the securing of the tire on the wheel centre. When the tire requires renewing, this ring must be removed, and the method generally adopted is to drill them out by some means.

The method here shown is simple, and the additional appliances required are limited. The wheels which require the removal of the rings, are mounted on rollers to raise the tread slightly above the ground, the common practice employed in the handling of locomotive driving wheels. Secured to the floor, in line with the centre of the axle, at the level of the rivet to be removed, there is a drilling machine. Alteration for elevation is made in the wheels instead of in the drilling machine, the rollers having an attachment whereby they can be drawn close together or further apart by means of a right and left hand screw altering the location of the rollers, each side being regulated independently.



Drilling Out Retaining Ring Rivets

The frame of the drilling machine, secured to the floor on a block of wood, consists of a base carrying two upright bearings. In these bearings there is mounted a hollow spindle, driven by means of a belt from the line shaft above and to the right. The hollow spindle carries the drill spindle, on the outer end of which there is a drill socket for the reception of the drill. This drill spindle receives its lengthwise motion from a feed screw attached to the handwheel at the near end. The drill spindle is feathered in the hollow spindle, from which it receives its motion.

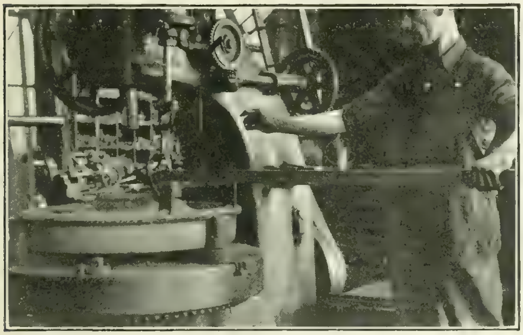
On the completion of each hole, the

wheels are moved around to the next position by means of the rachet attachment in the foreground, connecting with one of the supporting wheels on each side. This, of course, can be turned in either direction.

A somewhat similar attachment to this one is in use for drilling the thrust brass holes of the large driving wheels. It operates in almost an identical manner, the difference being that the drill for the brasses is mounted on a V block, which rests on the axle, to which it is clamped. Power is obtained in this case as in the latter, from belting from the line shaft.

Car Wheel Boring Lift at Toronto, Hamilton and Buffalo Railway Shops.

The majority of car wheel boring machines have attached a small hoist for placing and removing car wheels for boring, this attachment usually being applied by the manufacturers. Some of the older makes of borers have no such attachment, and it is for these that the lift shown in the accompanying illustration will be found of value. In the T.H. & B.R. shops at Hamilton, Ont., W. T. Kuhn, Master Mechanic, it has been found that with its use, equally as quick entry and removal of the wheels is possible as with the usual standard appliance.


Car Wheel Borer Lift Hook Attached to Air Hoist.

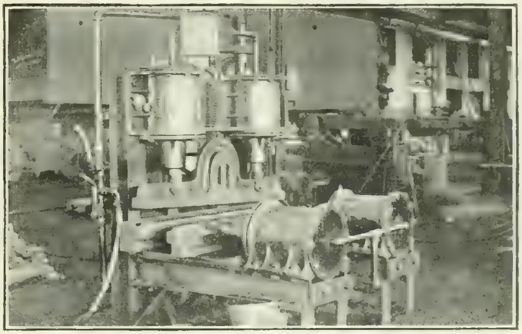
Were it not for the boring head of the machine, it would be a simple matter to use a hook arrangement through the centre bore, and lift the wheel into the mill. The construction of the machine makes necessary an eccentric lift. The T.H. & B. attachment makes this possible. On the inner end of a fulcrum rod, there is attached a small hook such as will pass in through one of the three wheel core holes and catch on the inner face. Above this hook is an eye, to which the hook of an air hoist is attached. The rod is fulcrumed a few inches back from the inner end on a U bridge, which bears on the flange of the tread. The leverage is such that while the lift is eccentric, a very light pressure on the outer end of the fulcrum rod will balance the wheel. The fulcrum rod serves a further purpose as a guide rod in directing the wheel into the faceplate jaws. The operation is clearly to be seen in the accompanying illustration.

A recent estimate of the saving in main line operation under electrification places the figure at 6.8%, based on a surplus of this amount over and above the payment of 5% on the actual cost of electrifying the line.

Straightening Brake Beams at Canadian Pacific Railway Winnipeg Shops.

The number of cars wrecked on the C.P.R. western lines is so great, owing to the extensive mileage over which it operates, as to require special provision to be made for the reclaiming of certain of the parts that are not placed beyond repair in a smash up. One part of the car equipment that is capable of reclamation is the steel brake beam, if of the I beam section as the majority are. In the company's Winnipeg shops, a special press of the form shown in the accompanying illustration has been rigged up for the special purpose of putting such brake beams back in service.

The device consists of a double vertical and horizontal frame, with two air brake cylinders mounted on the vertical part and two on the horizontal part, each pair so connected as to act in unison. The horizontal pair of cylinders carry on the end of their plungers, a die, slightly shorter than the width of a brake beam, and with a projecting flange that will fit into the channel of the I beam. This operates against a similar die, stationary on the frame. The vertical cylinders carry a flat die on the ends of their plungers, which will bear down on the top of the two lower dies, these latter forming the mating die for that cylinder.


Air Press for Straightening Brake Beams.

The brake beams, as brought in from the road, are twisted in all sorts of shapes. They are first heated bodily to a working heat in an oil furnace, and then, with alternate workings under the dies of the press, and with sledge hammers on an anvil block, the I beam is finally brought back to shape. The final forming is accomplished by tightening down thoroughly in the press. Considerable dexterity is required to bend back the twisted bars in the press, first operating one or other of the pairs of cylinders, but the operator, through considerable experience in this kind of work, is very skilful in handling the beams through the operation.

Handling Boiler Plate at Canadian Northern Railway Shops.

Last year, a systematic means of handling boiler plate was evolved at the C.N. R. Winnipeg shops. Outside the building, adjoining the door nearest the boiler shop section of the locomotive shop, there were erected two parallel wooden walls, about 6 ft. apart, and 75 ft. long, against which the boiler plate can be piled in stacks, with about 5 piles in each of the four rows. Spanning these piling racks is a traveller, running on tracks just outside the outer rows of plates, which in all the piles stand on end. On the cross beam of the traveller is a small carriage with block and chain, at a height above the plate just sufficient to enable the latter to be lifted clear of the ground. The plates from each of the piles can be thus lifted and carried along to the door entering the building. To the end of the traveller tracks can be attached short lengths of rail, which enable the traveller to be brought along from the rack end over the shop track, which comes out through the door of the building. If a car be first spotted on the latter, and the traveller rails be laid out from the ends, the plates can be placed directly on the car, and run in the shop, where they can be picked up by the shop crane, and run down to the boiler department.

Tie Preservative Experiment.—To test the effectiveness of preservative treatment of ties, the Chicago, Milwaukee and St. Paul Rd. has laid a section of single track branch line, which is subject to fairly heavy traffic, with treated and untreated ties, both red oak and hard maple, the ties used by the road. Six different preservatives are to be tried, 100 in a lot, of each kind of wood, which with 100 of each unpreserved makes a total of 1,400 ties under test. Half the ties are to be secured with screw spikes and flat tie plates, and the other half unprotected by tie plates and fastened with ordinary cut spikes. Most of the experimental track will be laid on a fill with a section in a cut. In order that the track may remain undisturbed as far as possible, new rails are to be laid with the ties.

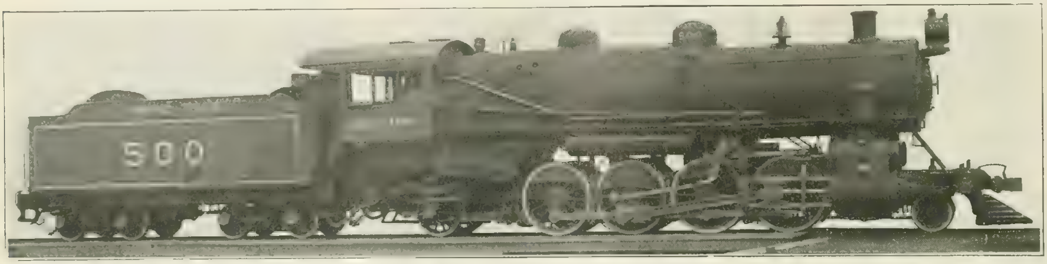
More Permanent Creosoting.—The old problem of retaining the creosote in treated timbers seems to be solved in the new plan of applying the creosote with paraffin or stearic acid heated to the melting point. Of course the wood must be hot also. The mixture or solution of liquids penetrates to the heart of the timber, and on cooling the paraffin or stearic acid solidifies, holding the creosote permanently in the pores.

The Lehigh Valley Rd. has issued an order instructing conductors and trainmen in the event of delay to trains to advise passengers of the cause in order that they may change their plans accordingly if they see fit. The same order applies to ticket agents, who must advise prospective passengers when any delay on the line has occurred.

Grand Trunk Railway Mikado Locomotives.

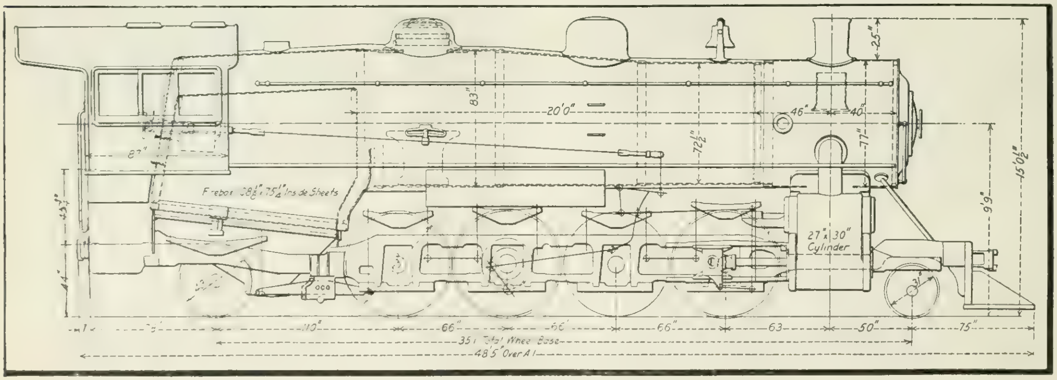
The Grand Trunk Ry. has recently received 25 locomotives of the 2-8-2 class from the American Locomotive Co., and an order was placed with the same builders for 50 more of the same design.

Freight traffic on the G.T.R. has until recently been hauled mainly by Richmond compound consolidation type locomotives, which have a total weight, including the tender, of 349,800 pounds, and a tractive power of 34,000 lbs. The mikados have a total weight, including the tender, of 455,100 lbs., and a tractive power of 51,700 lbs. With an increase in weight of only 30%, an increase in tractive power of 52% is obtained. This is very important, as more power per pound of locomotive weight means more revenue from the same motive power investment.



Grand Trunk Railway 2-8-2 Mikado Locomotive.

The consolidations are saturated engines, and have a total heating surface of 2,952 sq. ft. The mikados have an equivalent heating surface (evaporating heating surface plus 1½ times the superheating surface), of 4,776 sq. ft., an increase of 62% over the consolidations, with an increased grate area of only 11½%.



Elevation of Grand Trunk Ry. 2-8-2 Mikado Locomotive.

The mikados are doing their best work on the Western Division, which is made up of broken grades, which do not exceed 0.6%, except in one case, where a 5 mile 0.95% grade requires a helper service.

On the Western Division the following ratings have been put into effect:—

	Miles	Helper Service	Consolidation tons	Mikado tons	Increase
Port Huron to Nichols	156½	None	2000	2800	40%
Nichols to Elsden	168½	None	1700	2500	47%
Elsden to Nichols	168½	For 5 miles	2000	2800	40%
Nichols to Port Huron	156½	None	2000	2800	40%

These runs are being made over this division with an average speed for the consolidations of 20 miles an hour, and for the mikados of 22 miles an hour. The consolidations are averaging 38,500 ton miles, and the mikados 60,000, an increase of 56%.

The design in general follows the standard of the builders. The boiler is of the extended wagon top type. It is 74 ins. in diameter outside at the front end, and 83 ins. in diameter outside at the largest course. The barrel is fitted with 240 two in. tubes, 20 ft. long, and a 32 unit, Schmidt type, top header superheater. The firebox is 108⅛ by 75¼ ins., and includes a firebrick arch, a pneumatic fire door, and a power operated grate shaker. This well proportioned boiler, equipped with fuel saving devices, should give great economy in operation.

An interesting feature is the arrangement of the throttle lever support. It combines the lever fulcrum and quadrant support in an integral casting. This means a saving in the number of parts and also a reduction in the number of holes in the back head. It is also universal, as the support fits around the stuffing box as a sleeve, and can be turned to any desired angle to bring the lever in a convenient position. It is also of great advantage as a means of passing obstacles on the back head.

Other interesting features which have been included in this design are, outside steam pipes, screw reverse gear, self centring valve stem guides, the new guide for the extended piston rod, long main driving box, and the improved outside bearing radial trailing truck.

Following is a comparison of dimensions and ratios with that of the consolidations:—

Type	2-8-2	2-8-0
Weight on driving wheels, lbs.	213,500	183,700
Weight on leading truck, lbs.	26,000	25,700
Weight on trailing truck, lbs.	43,500	....
Weight, total of engine, lbs.	283,000	209,400
Weight of tender, lbs.	172,100	140,400
Wheel base, driving, ft. and ins.	16-6	17-0
Wheel base, total of engine, ft. and ins.	35-1	25-9
Wheel base, total of engine and tender, ft. and ins.	67-4	57-3
Cylinders, diameter and stroke, ins.	27x30	22½, 35x32
Valves, type	Piston	Piston
Valve gear	Walschaert	Stephenson
Wheels, diameter of driving, ins.	63	63
Wheels, diameter of truck, ins.	31	31
Wheels, diameter of trailing, ins.	43	....
Wheels, diameter of tend'r ins.	34	34
Journals, driving main, ins.	11x20	9½x12
Journals, driving others, ins.	10x12	9x12
Journals, truck, ins.	6½x12	6½x12
Journals, trailing, ins.	8x14	....
Journals, tender, ins.	6x11	5½ x10
Boiler, type	Ex. wagon top	Ex. wagon top
Boiler pressure, lbs.	175	210
Boiler, outside diameter, front end	74	68-3-8
Boiler, outside diameter, back end	83	76
Firebox, length, ins.	108-1-8	96-7-8
Firebox, width, ins.	75¼	75¼
Tubes, number and diameter, ins.	240-2	353-2

Flues, number and diameter, ins.	32-5-3-8	..
Tubes, length, ft. and ins.	20-0	15-0
Heating surface, tubes, sq. ft.	3398	2757
Heating surface, firebox, sq. ft.	215	168
Heating surface, arch tubes sq. ft.	27	27
Heating surface, total sq. ft.	3640	2952
Superheating surface, sq. ft.	757	.
Grate area, sq. ft.	56.5	50.6
Water, capacity of tender, gals.	9000	7000
Coal, capacity of tender, tons	15	10
Length over all, engine and tender, ft. and ins.	78-2-7-8	67 1 .
Extreme width, ft. and ins.	10-4	10-0
Extreme height, ft. and ins.	15-0½	15-0
Tractive power, maximum lbs.	51,700	33,970

Cross Ties Purchased by Railways in 1912.

The statistics in this bulletin are based on reports received from 51 steam railways and 36 electric railways operating in Canada in 1912. The total number of ties, 21,308,571, were valued at $9,373,869. Part of these were imported, but the bulk of the ties used are cut in Canada. The imports of ties in 1912 were valued approximately at $1,697,431, which would indicate that less than one fifth of the ties purchased in 1912 were imported.

TABLE 1

Kind of Wood	1911 Number	1911 Value	1911 Average Value	1911 Per Cent	1912 Number	1912 Value	1912 Average Value	1912 Per Cent
Total	14,389,224	$5,540,769	$0.39	100.0	21,308,571	$9,373,869	$0.44	100.0
Jack Pine	5,457,586	2,230,321	.41	37.9	7,783,034	3,417,238	.44	36.5
Cedar	1,433,395	577,427	.40	10.0	3,332,105	1,486,456	.45	15.6
Douglas Fir	1,947,662	740,548	.38	13.5	2,183,554	661,891	.30	10.2
Hemlock	1,674,047	590,878	.35	11.6	1,947,474	743,535	.38	9.1
Tamarack	1,389,897	438,280	.32	9.7	1,803,696	806,049	.45	8.5
Western Larch	1,194,779	514,013	.43	8.3	1,196,184	514,359	.43	5.6
Oak	149,747	121,215	.81	1.0	933,486	624,174	.67	4.4
Eastern Spruce	901,629	232,969	.26	6.3	835,121	330,854	.40	3.9
Hard Pine	444	491	1.11	(1)	658,096	434,840	.66	3.1
Chestnut	65,849	37,016	.56	0.5	266,082	157,225	.59	1.2
Beech	6,460	1,352	.21	(1)	103,583	70,220	.68	0.5
Western Cedar	59,072	25,057	.42	0.4	82,357	29,109	.35	0.4
Maple	13,891	2,908	.21	0.1	51,465	39,681	.77	0.2
White Pine	5,882	1,688	.29	(1)	44,408	15,348	.35	0.2
Birch	13,891	2,908	.21	0.1	37,943	22,605	.60	0.2
Red Pine	73,712	23,308	.32	0.5	26,646	12,673	.48	0.1
Balsam Fir	....	....	....		12,469	1,621	.13	0.1
Western Spruce	....	....	....		8,000	4,640	.58	(1)
Elm	222	95	.43	(1)	2,868	1,351	.47	(1)
Popular	1,001	270	.27	(1)	....			.....
Black Ash	58	25	.43	(1)	....			.....

(1) Less than one-tenth of one per cent.

Table 1 gives the number of ties purchased in 1911 and 1912, together with the total value, average value and per cent. distribution.

There were purchased in Canada in 1912 a total of 21,308,571 cross-ties, an increase in actual numbers of 6,919,347, or 48.1% over 1911. This increase took place on almost all the railways and was especially noticeable on transcontinental lines. Nineteen different kinds of wood were used, with jack pine still leading. The use of each material increased from 1911, with the exception of eastern spruce and red pine. Balsam fir and western spruce were added to the list of 1911, and poplar and black ash were dropped. The use of cedar ties has varied greatly from year to year. In 1908, 1909 and 1910, they headed the list, although the numbers purchased showed decreases each year. In 1911 cedar ties formed only 10% of the total and fell back to fourth place on the list. In 1912 their use increased by some 1,898,710 ties and this wood moved up to second place on the list, forming 15.6% of the total. Douglas fir has steadily increased in use since 1909, when data concerning its use was first obtained. Oak and the other five hardwoods—chestnut, beech, maple, birch and elm—have also increased remarkably. There seems to be a tendency on the part of the management of older established steam railways to reduce the use of soft, light material for cross-ties, especially where fast trains and heavy rolling stock are used. Some of the eastern roads have ceased to purchase cedar, pine, hemlock and tamarack and use only the hardwoods. The use of imported hard pine has increased with the hardwoods and was used in making 3.1% of the ties purchased in 1912. Western larch formed 5.6% of the total number, over a million ties of this wood having been purchased.

The average value of ties, at the point of purchase, increased from 39 to 44 cents in 1912. Increases are noted in the case of jackpine, cedar, hemlock, tamarack, eastern spruce, chestnut, beech, maple, white pine, birch, red pine, and elm. The increases in the value of beech, maple and birch were probably due to the fact that ties of these three materials were treated chemically in considerable numbers to prevent decay, and their cost is materially increased on this account. The decreases were in the values of Douglas fir, oak, hard pine, and western cedar. Western larch ties were purchased at the same price as in 1911. The values in all cases, being based on the cost at point of purchase, can never be considered to represent exactly the relative values of the different kinds of wood for cross-ties. So many variable factors enter into this cost that only in those cases where ties of a certain kind of wood are used in large numbers can the values given in the table be said to indicate the intrinsic value of the material.

TABLE 2.

Kind of Wood	1911 Number	1911 Value	1911 Average Value	1911 Per Cent.	1912 Number	1912 Value	1912 Average Value	1912 Per Cent
Total	13,799,982	$5,368,330	$0.39	100.0	20,825,209	$9,131,675	$0.44	100.0
Jack Pine	5,433,086	2,219,521	.41	39.4	7,757,418	3,402,417	.44	37.3
Cedar	1,266,510	508,776	.40	9.2	3,172,629	1,398,774	.44	15.2
Douglas Fir	1,624,392	673,787	.41	11.8	2,026,624	593,859	.29	9.7
Hemlock	1,658,504	585,181	.35	12.0	1,894,711	720,109	.38	9.1
Tamarack	1,366,346	433,962	.32	9.9	1,772,151	786,853	.44	8.5
Western Larch	1,194,779	514,013	.43	8.7	1,196,184	514,359	.43	5.7
Oak	144,763	118,172	.82	1.0	930,561	621,783	.67	4.5
Eastern Spruce	896,814	231,752	.26	6.5	818,485	325,202	.40	3.9
Hard Pine	444	491	1.11	(1)	653,896	431,900	.66	3.1
Chestnut	64,549	36,416	.56	0.5	266,082	157,225	.59	1.3
Beech	6,460	1,352	.21	(1)	103,583	70,220	.68	0.5
Western Cedar	59,072	25,057	.42	0.4	57,357	16,234	.28	0.3
Maple	13,891	2,908	.21	0.1	51,465	39,681	.77	0.2
White Pine	3,488	716	.21	(1)	44,227	14,965	.34	0.2
Birch	13,891	2,908	.21	0.1	37,943	22,605	.60	0.2
Red Pine	51,712	12,928	.25	0.4	26,646	12,673	.48	0.1
Balsam Fir	....	....	....	..	12,469	1,621	.13	0.1
Elm	222	95	.43	(1)	2,778	1,195	.43	(1)
Poplar	1,001	270	.27	(1)	....			
Black Ash	58	25	.43	(1)	....			

(1) Less than one tenth of one per cent.

Table 2 gives the details of ties purchased by steam railways in Canada in 1911 and 1912.

Steam railways in 1912 reported the purchase of 20,825,209 ties, this number forming 97.7% of the total for all Canada. The relative importance of each kind of wood and the average values in each case were approximately the same as those given in table 1, owing to the large proportion of the total used by these companies. The total is an increase of 7,025,227 ties, or 50.9% over 1911.

Steam railways paid an average price of 44 cents for their ties as compared with 50 cents paid by the electric railways. The steam railways paid less for every kind of wood used by both classes, with the exception of eastern spruce. These companies are usually closer to the source of supply, buy in greater quantities, and have better facilities for transporting their tie material than the electric roads. The steam railways used all the ties purchased in Canada in 1912 of the following kinds of wood:—Western larch, chestnut, beech, maple, birch, red pine and balsam fir.

It is interesting to note the increased use of hardwoods by steam railway companies. In 1911 woods such as oak, chestnut, beech, maple, birch, elm and black ash, together formed only 1.8% of the ties purchased. In 1912 this percentage increased to 6.7%, through increased purchases of 1,148,578 hardwood ties.

Table 3 gives the details of the purchases of tie material by the electric railways of Canada in 1911 and 1912.

Electric railways in Canada reported having purchased 483,362 cross-ties in 1912. This is a decrease of 18% from 1911, and, where the purchases of these railways in 1911 amounted to over 4% of the total, they formed less than 3% in 1912. As stated previously, the value of ties of every kind of wood used by both classes were greater in the case of steam railways, with the single exception of eastern spruce. The greater part of the material used by these companies was of the softer, lighter woods. Coniferous woods formed together 99.4% of the total. The only hardwoods used were oak and elm, and these together formed only 0.6% of the total. Imported hard pine, however, is used to a slight extent, and this material is in reality much harder than many of our native so-called hardwoods. Decreases in the number of ties purchased by electric railways are noticeable in the case of cedar, Douglas fir, oak and white pine, and these woods together form the bulk of the material used. Increases are seen in the use of hemlock, tamarack, jackpine and eastern spruce. Ties of western cedar, western spruce, hard pine and elm were reported for the first time in 1912. The use of red pine and chestnut was not reported by electric roads in 1911. These companies used all the western spruce ties reported in 1912.

TABLE 3.

Kind of Wood	1911 Number	1911 Value	1911 Average Value	1911 Per Cent	1912 Number	1912 Value	1912 Average Value	1912 Per Cent.
Total	589,242	$172,439	$0.29	100 0	483,362	$242,195	$0.50	100.0
Cedar	166,885	68,651	.41	28.3	159,476	87,681	.55	33.0
Douglas Fir	323,270	66,761	.21	54 9	156,930	68,032	43	32.5
Hemlock	15,543	5,697	.37	2.5	52,763	23,426	.44	10.9
Tamarack	23,551	4,318	.18	4.0	31,545	19,196	.61	6.5
Jack Pine	24,500	10,800	44	4.2	25,616	14,821	.58	5.3
Western Cedar	....	....		..	25,000	12,875	.51	5.2
Eastern Spruce	4,815	1,217	.25	0.8	16,636	5,652	.34	3 4
Western Spruce	....	.		..	8,000	4,640	.58	1.7
Hard Pine	..	.....			4,200	2,940	.70	0 9
Oak	4,984	3,043	.61	0.8	2,925	2,391	82	0.6
White Pine	2,394	972	.41	0.4	181	384	2.12	(1)
Elm		....		.	90	157	1.74	(1)
Red Pine	22,000	10,380	.47	3.7	....	.		.....
Chestnut	1,300	600	46	0.2	.	....	..	.

(1) Less than one-tenth of one per cent.

Many Canadian railway companies are beginning to realize the value of preserving at least a part of their tie material from decay and insect injury. The practice of chemical treatment of railway ties has been carried on by railways in the United States for some years with apparently satisfactory results. The practice in Canada is just beginning, but it is increasing rapidly, with the increasing cost of tie material and the constantly decreasing supply. In 1910 practically no treated ties were used by Canadian railways. In 1911 some 206,209 ties received chemical treatment before being placed in the roadbed. This number, while forming only 1.4% of the total number of ties used, was, nevertheless, an indication of the increase in this particular form of conservation. In 1912 a total of 1,818,189 ties were chemically treated. This number forms 8.5% of the total number of ties purchased. Steam railways used 1,789,189 of these treated ties, and electric railways used 20,000. The treated ties were mostly hardwoods, as it has been found more economical to treat the heavier, stronger woods than those which are liable to fail from mechanical wear before they have time to decay. The greatest actual saving by preservative treatment is found in the use of the so-called "inferior woods," provided that these are properly protected from mechanical wear. Until the price of the durable woods becomes excessive, the railway companies will not resort to expensive treatment of inferior woods, on account of this cost of protecting them from mechanical wear.

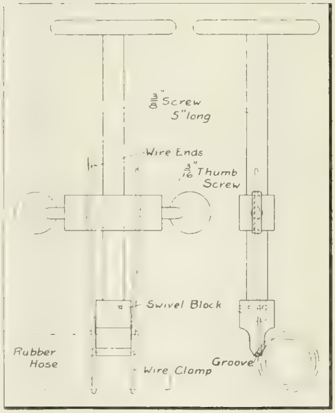
The foregoing bulletin was prepared by the Interior Department's Forestry Branch, R. H. Campbell, Director of Forestry.

A remarkably rapid piece of trestle building was recently completed jointly by the Pennsylvania and Lehigh Valley Railroads, when a double track trestle bridge across Newark Bay, which had been destroyed by fire, was completely rebuilt in 12 days. 2,857,059 ft. of timber were used, and 1,500 men were employed on the work. Rapid work was necessitated, as the trestle formed an important link in the New York freight connections for both roads.

Hose Wire Tightener at Grand Trunk Railway Port Huron Shops.

The workmen in the air brake department of the G.T.R. car shops at Port Huron, Mich., have made up a wire tightener for tightening up the wire on the ends of hose connections where the hose connects to the air coupling or nipple. Somewhat similar wire tighteners are in use in some shops for the same purpose, used particularly by wiremen in the stringing of wire fences in the country. This design differs from such tighteners to a sufficient degree to make a description worth while.

In the majority of shops where hose is attached to its couplings, an air tight joint is made between the hose and coupling by binding the outside of the hose over the coupling with wire closely wound. This arrangement, while quite satisfactory as regards efficiency, is deficient from the standpoint of not being rapidly made up, the numerous windings all requiring time. The coupling which this tightener makes is in more or less common use. It consists of a U bent piece of wire wrapped around the hose with the two loose ends of the U bend passed through the U and drawn up tightly, these loose ends being then turned back and cut off.



Wire Tightener for Small Air Hose.

On the lower end of a ⅜ in. screw, there is a swivel block. The turned down end fits into a corresponding hole in the block, a pin through the latter passing tangent to the screw in an annular groove in the latter. There is a turning handle on the upper end of the screw. The lower face of the swivel block is grooved to fit the size of wire to be used for the hose tightening. Mounted on the screw there is a vise block made from ⅝ in. square rod, with 3|16 in. thumb screws in the ends bearing down on 5|32 in. holes parallel with the central screw opening.

The U bent piece of wire is twisted around the hose end, and the loose ends slipped through the lower end of the U. The grooved swivel block is placed in the U end of the wire, and the loose ends slipped up through the holes in the vise block, and the thumb screws tightened down. Revolving the screw forces down the U and draws up the loose ends, thereby taking up the slack of the wire, finally drawing it up so as to tightly bind the hose end. The whole apparatus is then given a turn of 180 degs., and the loose ends cut off close up to the bend. This gives a splendid joint, and the workmen who have used it but a short time, giving up the old binding method in its stead, are very pronounced in its praise.

Canadian Pacific Railway Shops at McAdam Junction, N.B.

The C.P.R. is building an erecting shop and machine shop at McAdam Jct., N.B. The shops when completed will be 150 by 130 ft., comprising six stalls, one of which will be equipped with an electric locomotive lift. The construction will be entirely of concrete, reinforced where required, and finished with white cement.

The erecting shop will form the high portion of the shops, extending to a height of 40 ft. with a flat roof supported on heavy purlins and steel trusses spanning about 70 ft. Running the whole length of the erecting shop there will be a five ton electric travelling crane equipped with all the necessary motors.

The machine shop will be 80 ft. across, with concrete walls, steel columns and beams, and mill construction roof, and when completed will be equipped with all the necessary tools and mechanical labor saving machines. In connection with the machine shop there will be a lavatory, tool room and foreman's office.

The erecting and machine shops will be heated by hot air, and the car repair shop by steam, and they will be electric lighted throughout. Work on the foundations is well advanced, Henry Post, of Woodstock, N.B., being the contractor.

There will also be a car repair yard and car shop built to facilitate the repairing of cars in the contiguous districts. The total cost of the whole work will be about $100,000.

The use of powdered coal for fuel is receiving attention, and it is stated that one of the locomotive companies is spending $50,000 in an endeavor to adopt it for locomotives. It is claimed for it that there is a saving of about one third through more perfect combustion, a saving by the abolition of ash pits and cleaning gangs, and a direct saving in the ability to cut off fire at will when standing in stations and sidings, as well as other minor savings. The flexibility of fire, with the absolute regulation of coal and air, is also emphasized, and in switchers and small locomotives, the services of a fireman might be dispensed with.

Just 100 years ago last June, the first practical locomotive propelled by steam power was produced by W. Bradley and T. Hackworth. This locomotive, which was for use on a colliery line, was named the "Puffing Billy," and is still to be seen in the South Kensington Museum, London, Eng.

Orders by Board of Railway Commissioners.

[illegible] done this.

[illegible] to them.

[illegible] June [illegible].—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to [illegible]

[illegible] May [illegible].—Authorizing C.P.R. [illegible] main line and sidings of its Island Subdivision, B.C., across Franklyn St., Lubock Square, and Fitzwilliam St., Nanaimo, B.C.

[illegible] June [illegible].—Amending order [illegible], May 27, re road allowance of Alberta Government across C.P.R. between Secs. 7-24-25 and 12-24-26, w. 4 m.

[illegible] June 12.—Extending to [illegible], time within which G.T.R. shall install electric bell at crossing of Clara St., near Glen Robertson Station, Ont.

19563. June 12.—Ordering Canadian Northern Ry. to rebuild shelter at Wroxton, Sask., to afford accommodation equal to standard third class station; to be completed by Sept. 15. and rescinding order [illegible], May [illegible].

[illegible] June [illegible].—Ordering G.T.R. to employ night and day watchmen at crossing of Hurontario St., Port Credit, Ont., maintenance to be paid, [illegible] by G.T.R. and [illegible] by Toronto Tp.

[illegible] June [illegible].—Approving location of C.N. Ontario Ry. station grounds at Galea, mileage 259.30 from Ottawa.

[illegible] June [illegible].—Extending to July 15, time within which Canadian Northern Ry. shall erect gates at crossings of Frederica and Edward Sts., Fort William, Ont.

19567. June 11.—Authorizing C.P.R. to build spur for Massey-Harris Co., Calgary, Alta.

10568. June 12.—Ordering Canadian Northern Ry. to install, within 60 days, an improved type of automatic electric bell at highway crossing [illegible] Lots 2 and 3, Con. 1, Station 2661, Scarboro Tp.

10569. June 11.—Authorizing C.P.R. to build Johnville ballast pit spur across public road at grade between Lot 27, r. 3, and Lot 27-D., r. 2, Eaton Tp., Que.

[illegible] June [illegible].—Re allowance to shippers who furnish slats for floors of refrigerator cars. This order is given in full on another page.

[illegible] June [illegible].—Ordering C.P.R. to build spur to east boundary of Canada Tile and Fireproofing Co.'s property; and ordering Canadian Northern Ry. to build spur to southern boundary [illegible] three months.

[illegible] June [illegible].—Approving plan of proposed location of temporary chain hoist and raised rail, for unloading supplies in connection with St. Clair Ave. civic car lines near G.T.R. Davenport Station, Toronto.

19573. June 16.—Authorizing C.N. Ontario Ry. to build across Kathleen St., Sudbury; and within 60 days to install improved type of automatic electric bell there.

19574. June 16.—Authorizing Algoma Eastern Ry. to build Goat Island coal handling bridge on Goat Island docks, near Little Current, Ont.

19575. June 16.—Authorizing Esquimalt and Nanaimo Ry. to build bridge 27.8 over Coal Creek, on its Comox Extension, Vancouver Island, B.C.

[illegible] June 16.—Approving change in Campbellford, Lake Ontario and Western Ry. (C.P.R.) line in Lots 23, 24 and 25, Con. A, Haldimand Tp., Ont.

19577. June [illegible].—Authorizing C.P.R. to build extension across certain lands, streets and lanes in Edmonton, Alta.

19578. June 16.—Authorizing C.P.R. to build diversion of road allowance in n.e. ¼ of Sec. [illegible] its right of way, mileage 44.47 at Kelloe, Bredenbury Subdivision, Man.

19579. June 16.—Authorizing G.T.R. to rebuild [illegible]

19580 to 19582. June 12.—Authorizing G.T.R. to build siding for A. Davis and Son, Kingston, Ont.; siding and spur for Dominion Tire Co., Berlin, Ont., and 2 sidings for C. A. Scott, Toronto.

[illegible] June [illegible].—Approving [illegible] G.T.R. plan for its new bonded freight house, Wellington St., Montreal.

19584. June 16.—Authorizing Canadian Northern Ry. to build spur across Avenue T, for City of Saskatoon, Sask.

19585. June 17.—Recommending to Governor General in Council for sanction agreement, of June 2, amalgamating Canadian Northern Ry. and C.N. Branch Lines Co.

19586. June 16.—Approving plans of Pennington drain under G.T.R., South Norwich Tp., G.T.R. to have option of doing work on its right [illegible]

[illegible] Pacific Ry. stations, no. 1, mileage 1155.6, and no. 2, mileage 1147.2, west of Winnipeg, Cariboo District, B.C.

[illegible] June [illegible].—Approving location of G.T. Pacific Branch Lines Co.'s station at Fort Saskatchewan.

[illegible] June [illegible].—Authorizing G.T. Pacific Branch Lines Co. to carry traffic on its Biggar-Calgary Branch between Biggar, mileage 0, and Dodsland, mileage 48, Alta.; speed of trains not to exceed 20 miles an hour; and rescinding order [illegible], Oct. [illegible], 1912.

19591. June 16.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to build road diversion in Lot 25, Con. 1, Clarke Tp., at mileage 142.05 from Glen Tay.

19592. June 16.—Approving clearances on C.P.R. plan of its coaling plant in North Transcona yards, Man.

19593. June 17.—Authorizing C.P.R. to build bridge 103.7, near Foster Station, Sherbrooke Subdivision, Que.

19594. May 19.—Authorizing C.P.R. to build spur to Hastings Park, Vancouver, B.C.; to be completed within three months from date.

19595. June 16.—Authorizing C.P.R. to build new trackage in its North Transcona Yard, across City of Winnipeg's transmission line in Lot 58, Kildonan, Man.

[illegible] June 17.—Extending to Aug. 15, time within which C.P.R. shall install gates at North Vancouver Ferry, Columbia Ave., and G.T. Pacific Ry. team crossings, Vancouver, B.C.

19597. June 17.—Authorizing C.P.R. to build its ballast pit spur across 2 highways at grade between Lot 8, Con. 1, and Lot 8, Con. 2, and in Lot 9, Con. 2, Hinchinbrooke Tp., Ont.

19598. June 16.—Ordering Canadian Northern Ry. to build a third class station and two-car cattle pen at Decker, Man., to be completed by Sept. 15.

19599. June 16.—Ordering C.P.R. to move station off public road allowance to [illegible] ft. west; build crossing along existing highway at Franklin, Man.; and move grain elevators off highway; work to be completed within 60 days.

19600. June 17.—Authorizing Dominion Atlantic Ry. to build siding for Markland Fruit Co., Kingston, N.S.

[illegible] June [illegible].—Authorizing G.T.R. to build spurs for Pilkington Bros., Thorold Tp., Ont.

[illegible] June [illegible].—Authorizing C.P.R. to build spur for T. R. Johnston, Medicine Hat, Alta., to be completed within 3 months.

[illegible] June [illegible].—Authorizing Canadian Northern Ry. to build spur along lane through Blocks 21 and [illegible], across Isabella St., [illegible] through Block 30, Saskatoon, Sask.

[illegible] June [illegible].—Ordering that all wires on Yonge St. and [illegible] Rd., North Toronto, be placed underground [illegible] cost of moving its wires.

[illegible] June [illegible].—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to operate work train service over C.N. Ontario Ry. crossing for [illegible] months, pending completion of interlocking plant; crossing to be protected by flagman maintained by C.,L.O. & W.R.

[illegible] June [illegible].—Relieving C.P.R. from providing further protection at crossing of [illegible] highway east of Berthier Jct., Que.

19607. June 16.—Ordering C.P.R. forthwith to remove trees south of track and west of crossing at mileage [illegible], about [illegible] miles [illegible] Lac Station, Que.

19608. June 12.—Authorizing C.P.R. to build spur adjoining Neebing Ave., Fort William, Ont., from its main line, at mileage 3.14, and extending to 100 ft. south of Canadian Northern Ry. main line to connection with industrial spur.

19609. June 13.—Approving location of G.T.R. station at Rideau, Ont.

[illegible] June 11.—Authorizing C.N. Ontario Ry. to build across [illegible]

19611. June 18.—Approving location of G.T. Pacific Branch Lines Co. station on its Regina Boundary Branch, at Boundary Line, mileage [illegible], Sask.

[illegible] June [illegible].—Approving location of G.T. Pacific Ry. station grounds through Charles Indian Reserve [illegible]

[illegible] June [illegible].—Approving G.T. Pacific Branch Lines Co. site and station at Totzke, Sask.

19614. June 18.—Authorizing C.P.R. to build bridge 312 near Elmsley Station, Ont.

19615. June 18.—Authorizing C.P.R. to revise grade of crossing on Sims St., Hallam Tp., Ont.

[illegible] June [illegible].—Approving [illegible] ture of bridge 265, at mileage 46.80, District 13, Hamilton Division, G.T.R., Ont.

19617. June 18.—Authorizing Brantford Tp., Ont., to build Humberstone Ave. across Brantford and Hamilton Electric Ry.

[illegible] June [illegible].—Rescinding order [illegible], May 26, re approval of G.T. Pacific Ry. station at Empire Ave., Neebing Tp., Ont.

[illegible] and C.P.R.

19623. June 19.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to build [illegible] izes said crossing.

[illegible] trains, operated across Wellington St., just north [illegible] miles on hour, and that all switching movements be flagged.

[illegible] within which G.T.R. install bell at crossing of Main St., Thorndale, Ont., as required by order [illegible]

19626. June 19.—Authorizing G.T.R. to build siding for Galt Stove & Furnace Co., Galt, Ont., within 3 months from date.

19627. June 18.—Approving location of G.T. Pacific Branch Lines Co.'s station at Lett, Sask.

19628. June 18.—Approving revised location of G.T. Pacific Branch Lines Co. Biggar-Calgary Branch and station in w. ½ Sec. 29-33-18, w. 3 m., Saskatoon District, Sask.

19629. June 17.—Authorizing C.N. Quebec Ry. to build across public road in St. Eustache, and reserving question of protection to be provided.

19630. June 17.—Authorizing Canadian Northern Ry. to build spur for Manitoba Gypsum Co., Winnipeg, within 3 months from date.

19631. June 18.—Authorizing Canadian Northern Ry. to divert River Road, near Victoria Bridge, Calgary, Alta., and take necessary land for same; and to maintain diversion for one year.

19632. June 19.—Extending to Sept. 1, time [illegible] at crossing of Bridge St., Yarker, as required by order [illegible]

19633. June 18.—Authorizing G. R. Duncan, Fort William, Ont., to build siding in McIntyre Tp., across Waterloo St., Port Arthur, to C.N.R. right of way, C.N.R. to build remainder.

19634. June 19.—Authorizing New York Central and Hudson River Rd. to build spur for Howard Smith Paper Mills, Beauharnois, Que., within 3 months from date.

19635. June 19.—Authorizing C.P.R. to build road diversion at mileage 36 from Golden, B.C., and close portion of present road allowance within its right of way.

19636. June 20.—Authorizing C.P.R. to build spur for Canadian Lumber Yards, Moose Jaw, Sask.

10637. June 20.—Authorizing C.P.R. to open for traffic portion of its Edmonton Subdivision from Strathcona to Jasper Ave., Edmonton, including high level bridge over North Saskatchewan River, provided speed of trains does not exceed 12 miles an hour across the bridge.

10638. June 20.—Ordering that C.P.R. crossing of Rue Plinguet, St. Boniface, Man., be protected by watchman between 7 a.m. and 7 p.m.

10639. June 19.—Approving location of C.P.R. double track from Islington, mileage 10, to Guelph Jct., mileage 39.1, London Subdivision, Ont.

19640, 19641. June 19.—Authorizing C.P.R. to build road diversion at mileage 33.47 from Golden, B.C., and close portion of road allowance within its right of way; and to build road diversions at mileage 31.2 and 35.6 from Golden, B.C.

19642. June 20.—Authorizing G.T.R. to build siding for S. McCord, Toronto.

19643. June 16.—Approving location 10 G.T. Pacific Branch Lines Co. stations in Cariboo District, B.C.

19644. June 19.—Approving location of Kettle Valley Ry. from mileage 0 to 20, Hydraulic Summit to Penticton, B.C.

19645. June 18.—Authorizing Algoma Eastern Ry. to build dock at Goat Island, near Little Current, Ont.

19646. May 16.—Authorizing C.P.R. to operate interlocking plant at Batiscan River Bridge, Quebec Subdivision, at mileage 102.5, on condition that when a distant semaphore is at "Caution," all trains stop at that semaphore until it is cleared, as well as at the home semaphore.

[illegible] June [illegible].—Extending to [illegible], time within which C.P.R. shall install electric bell at highway crossing at Glen Major flag station, Ont.

19648. June 20.—Amending order 19571, June [illegible] Co.'s spur by C.P.R. and Canadian Northern Ry.

10649. June 18.—Authorizing C.P.R. to build road diversion and to carry its Swift Current Northwesterly Branch across same at grade at mileage 40.84 from Swift Current, Sask.

[illegible] June [illegible].—Ordering C.P.R., within [illegible]

[illegible]

[illegible] C.P.R. to build extension to spur for Dearborn Chemical Co., [illegible]

[illegible]

[illegible] Couchiching Narrows, near Atherley, Ont., with- [illegible]

[illegible] within which C.P.R. shall complete branch line [illegible]

[illegible] engine passing over crossing of Archabail St., [illegible] the [illegible]

[illegible] Manufacturing Co., [illegible]

[illegible]

[illegible] Sask.

[illegible]

19689. June 25.—Authorizing Toronto Suburban Ry. to build across C.P.R. Goderich Branch, and spur into Prison Farm, in Lot 2, Cons. 1 and 2, Guelph Tp.; and rescinding order 19171, May 5 [illegible]

[illegible] location at the Jacques-Cartier River, Lots 79 and 80, Les Ecureuils Parish.

[illegible] Road, Toronto, without first being brought to a [illegible]

19692. June 23.—Authorizing clearances at [illegible]

19693. June 25.—Ordering Brockville, Westport and North Western Ry. to renew ties on bridges just east of Lynn Station, just west of [illegible]

19694. June 26.—Authorizing G.T.R. to build [illegible]

[illegible] work of opening in fill at Cameron Bay, near [illegible]

[illegible] days, to install electric bell at crossing of John St., Port Hope, Ont., and thereafter maintain [illegible]

[illegible] Southern Counties Ry. to run trains with passengers, baggage, express and other traffic over Central Vermont Ry. between east end of its Southwark Yards, St. Lambert, and Richelieu, Que., 12 miles; and to use C.V.R. passenger and freight stations, yards, and other facilities.

19698. June 26.—Amending order 18907, Apr. 8, re C.P.R. spur at mileage 41 from Crowsnest, [illegible]

19699. June 26.—Authorizing C.P.R., pending installation interlocking plant, to operate trains over G.T.R. crossing at Tecumseth St., Toronto, on signals from switchmen; interlocking plant to [illegible]

[illegible] to connect its Ansley spur line with city's spur line, Medicine Hat, Alta.

19701. June 26.—Authorizing C.P.R. to build 2 spurs for Canada Malting Co., Calgary, Alta.

[illegible] shown on page 4 of Montreal and Southern Counties Ry. Local Passenger Tariff, C.R.C. 3, [illegible] real and Richelieu and intermediate stations in Quebec.

19703. June 27.—Authorizing C.P.R. to build extension to siding between its right of way and [illegible]

[illegible] St. Ry.

[illegible]

ton when valuation does not exceed $20 per ton; [illegible] days from date.

19713. June 27.—Ordering Canadian Northern Ry. to move crossing south of south switch, in northerly direction, 60 ft. from south switch, and grade road from crossing to loading platform, to satisfaction of the Board's Engineer.

19714. June 30.—Authorizing G.T.R. to rebuild bridge 99 over public road at milepost 101.10, 2.90 miles east of Midland, Ont.

19715. June 30.—Approving revised location of G.T. Pacific Branch Lines Co. station at Euthilda, Sask.

19716. June 30.—Authorizing C.P.R. to use subway across Main St., Kenora, Ont.

19717. June 28.—Authorizing C.P.R. to build bridges, 22.3, near Peterboro station; 21.8, near Botulf station, and 19.4, near Sutton station, Ont.

[illegible] Branch Lines Co. to operate trains over crossing of C.P.R. Arcola Branch at Griffin, Sask., without first being brought to a stop.

19719. June 30.—Ordering C.P.R., within 60 days, to move stock pens at Shelburne to west side of its tracks; pens to be long enough for not less than four cars, and each pen to have gate opening to loading platform; upper deck loading chutes to be provided for sheep or hogs at each end of pens.

19720. June 30.—Authorizing C.P.R. to build spur for Cockshutt Plow Co., Calgary, Alta.

19721. June 30.—Relieving C.P.R. from providing further protection at highway crossing at mileage 22.70 from St. Martin's Jct., Que.

19722. June 30.—Authorizing Toronto, Hamilton and Buffalo Ry. to build spur for J. McInnes, Hamilton, Ont.

19723. June 27.—Dismissing Eustis Mining Co.'s application for order amending Canadian Car Service Rules to provide for five days' free time at Sorel, Que., on copper-sulphur ore shipments for transfer to vessels.

19724. June 30.—Authorizing C.P.R. to build spur for Wells & Emerson, Port Arthur.

19725. June 30.—Approving proposed change in location of C.P.R. siding for William Davies Co., Front St. and Esplanade Ave., Toronto.

19726. June 30.—Approving revised locations of portions of C.P.R. Shuswap Subdivision, mileages 0 to 25, Revelstoke to Taft, B.C.; authorizing it to revise grade of line and highway crossings, and to build double track at grade across [illegible]

[illegible] within which C.P.R. shall complete spur adjoining Neebing Ave., Fort William, Ont.

19728. June 30.—Approving change in location of C.P.R. station at Farm Point, Hull Tp., Que.

[illegible] 20, 1912, re C.P.R. revised location for 24.74 miles in Alberta.

[illegible] Lake Ontario and Western Ry. (C.P.R.) to operate over crossing of G.T.R. in Whitby, Ont., for construction purposes only, for six months; crossing to be protected by watchman appointed [illegible]

19731. July 2.—Authorizing Winnipeg, Selkirk and Lake Winnipeg Ry., to cross, for construction purposes only, until Oct. 31, the C.P.R. Selkirk Branch.

19732. June 21.—Approving revision in location of C.P.R., from mileage 102.70, southwesterly, to mileage 103.39, from Revelstoke, B.C.; revision in grade of line and crossings, as shown on plan; and authorizing building of double track across 7 highways, between mileage 96 and 131.55; after diversion at mileage 102.92 and grade crossing are completed, C.P.R. may close portion of present road allowance within its right of way.

19733. July 2.—Approving change in location of C.P.R. station at Salmon Arm, B.C.

[illegible] bridge 52.1 over Salmon River, near Ardendale Station, Ont.

19735. July 2.—Authorizing C.P.R. to build ballast pit spur across road allowance at grade [illegible]

19736. July 2.—Authorizing C.P.R. to use bridges over Kaministikwia and McKellar Rivers, Fort William, Ont.

[illegible] diversion in n.w. ¼ Sec. 4-3-22, w.p.m., [illegible] and to close portion of present road allowance to be diverted, and rescinding order [illegible]

[illegible] to adjust freight charges on sand received at Edmonton over its line since June 21, 1912, to [illegible] range that freight charges be collected on this [illegible]

[illegible] C.P.R. to build [illegible]

19740. July 3.—Authorizing C.P.R. to operate over interlocking plant on Hull Electric Ry., [illegible]

[illegible]

[illegible] July [illegible].—Approving [illegible] plan showing foot subway to be built by G.T.R. at Jacobs Ladder Stairway, Port Hope, Ont.

[illegible] July [illegible].—Approving [illegible] location of Canadian Northern Ry. and National Transcontinental Ry., at St. Boniface, Man.

19744. July 3.—Ordering Canadian Northern Ry. to appoint caretaker at Hymers, Ont., to keep waiting room clean and heated, see that freight is properly housed and freightshed kept locked, key to be kept convenient for persons coming for goods between 8 a.m. and 6 p.m.; station waiting room and outside of building to be painted, freightshed doors put in condition so that they can be locked, platform to be repaired, and portable stock loading chute be installed; all to be carried out by Aug. 15.

19745. July [illegible].—Approving revised location of portion of Campbellford, Lake Ontario and Western Ry. (C.P.R.) from mileage [illegible] to 119.60, and location of station to north of Park St., Cobourg, Ont., at mileage 119.72, from Glen Tay.

19746. July 4.—Authorizing C.P.R. to build diversions of road allowances at mileage 94.28 from Weyburn, Sask., and to build its Weyburn-Lethbridge Branch at grade across same.

19747, 19748. July [illegible].—Approving C.N. Quebec Ry. location through Chilton and Lussier Tps., mileage [illegible] to [illegible].10, and through Chertsey and Rawdon Tps., mileage [illegible] to 36.5[illegible], from St. Jacques Junction.

19749. June [illegible].—Approving schedules of Dominion, Canadian Northern, Canadian, and Great Northern, Express Cos. The details are given on another page under "Among the Express Companies."

19750. July 5.—Approving proposed change in location of C.P.R. station at Khedive, Sask.

19751. July [illegible].—Approving revised location of Burrard Inlet Tunnel and Bridge Co.'s line from station highwater mark, north shore Burrard Inlet, to station 174 + 88.7; and rescinding order 505, June 13, 1905.

19752. June 30.—Approving G.T.R. revised plan of subway on Peter St., Port Hope, Ont.; and rescinding order 19105, April 22, in so far as it approves subway there.

19753. July 5.—Authorizing C.P.R. to build extension to spur for R. H. Smith, Etobicoke Tp.

19754. July 4.—Amending order 2119, Nov. 28, 1906, re crossing of G.T.R. by C.P.R. on the Don improvement, Toronto.

19755. July 4.—Ordering Salisbury and Albert Ry. to put guard rails on all bridges on its line, 50 ft., or over, in length, work to be completed by Aug. 20.

19756. July 2.—Ordering C.N. Ontario Ry. within 90 days to install improved type of illuminated electric bell at crossing of Sidney St., Trenton, Ont.

19757. July 7.—Authorizing C.P.R. to open for traffic portion of Kootenay Central Ry. between mileage 0 and 41, Golden to Spillimacheen, B.C.

19758. July 7.—Authorizing C.P.R. to build bridges 10.7 near Asphodel station, and 30.8 near Kendry station, Ont.

19759. July 4.—Authorizing Hamilton St. Ry. to cross at grade, Toronto, Hamilton and Buffalo Ry., serving Steel Co. of Canada, between Broken Front and First Concessions, Hamilton, Ont.

19760. July 5.—Extending to July 31, time within which G.T.R. install gates at crossing of Lake Shore Road, Vaudreuil, Que.

19761. July 5.—Authorizing C.P.R. to build spur lines for P. Burns & Co., Calgary, Alta.

19762. July 8.—Extending to July 20, time within which C.P.R. install gates at Bartlett Ave., Toronto, Ont., as required by order 18698, Feb. 12.

19763. July 4.—Approving revised location G.T.R. connecting track, with Toronto, Hamilton and Buffalo Ry., serving Steel Co. of Canada, Hamilton, Ont.

19764. July 4.—Authorizing Toronto, Hamilton and Buffalo Ry. to build two spurs in Hamilton, crossing Hamilton Radial Electric Ry., and Burlington St., for Steel Co. of Canada, to be completed withon three months.

19765. July 7.—Extending, to Sept. 30, time within which C.P.R. install gates at Osler Ave., North Toronto, Ont., as required by order 19229, May 10.

19766. July 7.—Extending, to Dec. 31, time within which C.P.R. complete spur for Dominion Bridge Co., at Islington, Ont., as authorized by order 18998, Apr. 5.

19767. July 4.—Authorizing C.P.R. to cross, at grade, with a side track on its Saskatoon Subdivision, Sask., certain lanes and streets in Saskatoon.

19768. July 5.—Authorizing Vancouver, Victoria and Eastern Ry. and Navigation Co. to build three spurs from its main line, in Block 82, District Lot 264 A, connecting lines, opposite Block 3, District Lot 200 A, Vancouver, B.C., completed within three months.

19769. July 3.—Ordering Quebec Oriental Ry. to ballast its line, from Metapedia to New Carlisle, with complete lift of 6 ins. of ballast; fencing, gates, wooden culverts, and all decayed portions of trestles be renewed, work to be completed by Dec. 31.

19770. July 5.—Authorizing G.T.R. to build siding for British Canadian Canners, Grantham Tp., Ont.

19771. July 7.—Approving Canadian Northern Ry. [illegible] class station buildings.

19772. July 8.—Authorizing Vancouver, Victoria and Eastern Ry. and Navigation Co. to build across Phillips Ave., Burnaby Municipality, B.C.

[illegible] July [illegible] [illegible] C.P.R. [illegible]

[illegible] July [illegible] C.P.R. to build extension to spurs for A. Snyder & Co., Portage la Prairie, Man., and for B. S. Spaulding, Medicine Hat, Alta.

19776. July 8.—Relieving C.P.R. of speed limitations on its line between mileage 75.85 and 112.00, Weyburn-Lethbridge Branch.

[illegible] July 8.—Authorizing C.P.R. [illegible] two connections with the Otis Staples Logging Ry., at mileage 15.15, near Kimberly, B.C.

19778. July 10.—Authorizing C.P.R. to build at grade a siding track across roadway between Lots 3 and 4, Con. 1, Saltfleet Tp., Ont.

19779. July 10.—Authorizing C.P.R. to build additional track across 14 highways, mileage 35.8 to 47.9, from Brandon, Man.; after diversion at mileage 46.46 is made and grade crossing built, it may close portion of road allowance diverted within its right of way.

19780. July 10.—Dismissing L. J. Chevrier's application to reopen matter of C.P.R. taking certain lands in Rigaud Village, Que.; and order 18721, Feb. 13.

19781. July 10.—Amending order 19603, June 17, authorizing Canadian Northern Ry. to build spurs in Saskatoon, Sask.

19782. July 8.—Authorizing Canadian Northern Ry. to build additional track across Main St., Humboldt, Sask.

19783. July 5.—Extending, to July 31, time for installing interlocking plant by C.N. Ontario Ry. at crossing of C.P.R. and G.T.R., near Ottawa, as provided by order [illegible], Aug. [illegible].

19784. July 9.—Ordering C.N. Ontario Ry. to build cattle passes, with 5½ ft. clearance, at T. McLaughlin's farm on Lots 24 and 25, Con. B, Westmeath Tp.

19785. July 7.—Authorizing C.N. Ontario Ry. to build bridge across Little Sturgeon River, Beaucage Tp., mileage 243.5 from Ottawa.

19786. July 10.—Approving proposed Supplement 1 to Canadian Classification 16, as finally revised and submitted by Canadian Freight Association, to become effective Aug. 20.

19787. July 10.—Approving Essex Terminal Ry. location from its line on Lot 59, Con. 1, to Turkey Creek, Sandwich West Tp., Ont.

19788. July 10.—Authorizing G.T.R. to build siding for Silicate Brick Co., Ottawa.

19789. July 11.—Authorizing G.T.R. to build siding for Dominion Canners, Ltd., East Sandwich Tp., Ont.

19790, 19791. July 11, 10.—Ordering G.T.R. and C.P.R., respectively, forthwith, to employ watchmen at crossing on road from Beaconsfield to Ste. Genevieve, Que., from 8 a.m. to 7 p.m, until Oct. 15, and thereafter from May 15 to Oct. 15, each and every year until further order; one third of cost to be paid by municipality.

19792. July 11.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to build across road allowance at mileage 153.76 from Glen Tay, Ont.

19793. July 12.—Approving revised location of portion of C.P.R. Thompson Subdivision, from mi'eage 6.76, to 7.72; and from mileage 8.46, to 8.67, from Kamloops, B.C.; and to build additional track at grade across Third and Second Aves., Kamloops, and road allowances in Sec. 12-20-18, w. 6 m.; Lot 435, and Lot 346, P.G.S., r. 18.

19794. July 10.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to build across 4 highways, at mileage 79, 79.04, 79.19, and 79.61 from Glen Tay, Ont.

19795. July 11.—Authorizing C.P.R. to build bridge across Red River, on its Kildonan cutoff, near Winnipeg, and rescinding order 18618, Feb. 3.

19796. July 16.—Amending order 19644, June 19, re approval of Kettle Valley Ry. location between Hydraulic Summit and Penticton, B.C.

19797. July 15.—Authorizing C.P.R. to divert road and cross same at grade in Sec. 7-12-23, w. 3 m., Sask., and close portion of road allowance within its right of way.

19798. July 16.—Authorizing Saskatchewan Government to carry Third St. East across Canadian Northern Ry., at Service Townsite, Sask.

19799. July 11.—Approving British America Express Co.'s Standard Tariff C.R.C. 12.

19800. July 17.—Amending order 16998, July 13, 1912, re C.P.R. spur near Longue Point, Que.

19801. July 17.—Authorizing C.N. Ontario Ry. to build across public road between Lots 13 and 14, Con. 1, Pembroke Tp., by bridge, provided that proper road be left for J. A. Gourlay, between road at right angles to road to be crossed, and Muskrat River.

19802. July 17.—Approving C.N. Ontario Ry. revised location through unsurveyed territory, Algoma District, mileage 198.26 to 201.66.

19803. July 17.—Authorizing South Hull Tp., Que., to build crossing over C.P.R. at mileage 9.7 from Aylmer.

19804. July 17.—Authorizing C.P.R. to build [illegible] Subdivision, Sask.

19805. July 17.—Approving C.P.R. revised location [illegible] Moosomin [illegible].

19806. July 11.—Authorizing G.T. Pacific Ry. to build spur across Canadian Northern Ry. between [illegible] and C.N. Alberta Ry., in n.e. ¼ Sec. 6-53-19, w. 5 m., North Alberta District, crossing to be protected by a diamond in C.N.R., and by watchmen; and such crossing to be temporary until C.N.R. commence to operate the line, when order shall be rescinded, cost of diamond and watchmen to be paid by G.T.P. Ry.

19807. July 17.—Authorizing G.T. Pacific Ry. to build spur for Edmonton Portland Cement Co., in Sec. 1-53-19, w. 5 m., Alta., to be completed within three months.

19808. July 15.—Approving G.T.R. plan showing proposed automatic block installation on Victoria Jubilee Bridge, Montreal, carrying automatic block district from east end of Point St. Charles across bridge to St. Lambert and connecting it with the interlocking plant at St. Lambert Jct.

19809. July 17.—Authorizing C.P.R. to build spur for Watson & Todd, Ltd., Ottawa.

19810, 19811. July 18.—Extending, to Sept. 15, time within which G.T. Pacific Ry. install interlocking plant at crossing by its stock yard spur, of Canadian Northern Ry., St. Boniface, Man., as required by order 16930, June 29, 1912; and also for installation of interlocking plant at crossing of Port Arthur and Fort William Electric Ry., at Syndicate Ave., Fort William, Ont., as required by order 17657, Sept. 24, 1912.

19812. July 18.—Authorizing C.P.R. to rebuild bridge 18.1, near Inglewood Station, Ont.

19813. July 17.—Authorizing Canadian Northern Ry. to extend spur for Twin City Coal Co., across Sixth St. East, Edmonton, Alta.

19814. July 17.—Approving location of C.P.R. Port Moody and North Shore Branch, from station 182+70, to ferry dock, east side of North Arm; and from Roche Point, where car ferry is shown on plan, to Hendrie Ave.

19815. July 17.—Authorizing City of Regina, Sask., to build its municipal railway at grade across C.P.R. Arcola Branch and spur at Winnipeg St., between Ninth and Tenth Aves.

19816. July 18.—Authorizing Hamilton St. Ry. to build across Oliver Chilled Plow Works of Canada's spur, on Gilkison St., opposite McKinstry St., Hamilton, Ont.

19817. July 17.—Approving location of G.T. Pacific Branch Lines Co.'s stations at Erith, Weald, McLeod River, Embarras, and Minehead, Alta.

19818. July 18.—Approving G.T. Pacific Branch Lines Co.'s station site and station at Charlton, Bear's Head, and The Lean Man Indian Reserves, 110 and 11, Battleford Branch, Sask.

19819. July 18.—Approving location of Algoma Eastern Ry. station at Little Current, Ont.

19820. July 17.—Approving location of G.T. Pacific Ry. stations at Petry, Empire Ave., Kelly, Yonde, and Alcona, Ont.

19821. July 17.—Approving locations of C.P.R. stations at Verwood, Mayronne, Aneroid, Kincaid, Landscape, and Hazenmore, Sask.

19822. July 18.—Ordering G.T.R. to build crossing between Lots 5 and 6, Con. 7, Fitzroy Tp., mileage 160, near Carp, Ont.; easterly line of proposed road to be 60 ft. clear of westerly end of culvert.

19823. July 17.—Authorizing Niagara, St. Catharines and Toronto Ry. to build spur along King and John Sts., Niagara-on-the-Lake, to connect same with Michigan Central Rd. siding, and to cross Regent St., to be completed within three months.

19824. July 11.—Authorizing City of Medicine Hat, Alta., to build subway on Esplanade St., to be completed within six months from date.

19825. July 11.—Approving revised location of portions of C.P.R. as built from mileage 18.27 from Brandon, Man., westerly to mileage 35.69; and from mileage 115 to 124; and authorizing building of additional track across 26 highways and diversion of road, in Sec. 27-9-23, w.p.m., portion of road allowance within its right of way to be closed.

19826. July 18.—Authorizing C.P.R. to use bridge 109.7, over Pitt River, Cascade Subdivision, B.C.; speed of trains over bridge limited to 6 miles an hour.

19827. July 11.—Authorizing C.P.R. to build road diversion at Suffield, Alta., and close portion of present road allowance within its right of way.

19828. July 11.—Authorizing C.P.R. to build branch line for S. E. Stewart, Saskatoon, Sask.

19829. July 18.—Authorizing C.P.R. to build double track of main line across Municipal Roads D.G.S. 66, 67, 86, 87, and 93, Kildonan Parish, Man.

19830. July 14.—Ordering that all switching movements on the two G.T.R. sidings which parallel the main line, be flagged over crossing of Barrett St., Port Hope, Ont.

General Order 107, July 4.—Rules and regulations governing fire guarding by railways under the Board's jurisdiction; and rescinding order 16570, May 22, 1912.

Railway Development

Projected Lines, Surveys, Construction, Betterments, Etc.

The Algoma Eastern Ry. Co. has been authorized by the Board of Railway Commissioners to build a dock at Goat Island, near Little Current, Ont., with a coal handling bridge thereon. (July, pg. 331.)

The Athabasca and Grande Prairie Ry. which it is proposed to build, would open up what are known as the Hoppe coal fields in the Smoky River Valley of Alberta. They are said to contain anthracite of good quality. Preliminary surveys have been made, and press reports state that application is about to be made for approval of the plans, with a view of asking the Dominion Government to aid in the construction of the line by a cash subsidy and a guarantee of bonds. (July, pg. 331.)

Brockville, Westport and Northwestern Ry.—The Board of Railway Commissioners has ordered the company to renew ties on several bridges, to place new stringers under rails, to renew at least 30,000 ties on the whole line, to ballast the whole line, and to make the highway crossings conform to the Board's standard regulations, the work to be completed by Nov. 1.

Buctouche Ry. and Transportation Co.—The Minister of Railways has approved location plan for the projected extension from Richibucto to Loggieville, N.B., 47 miles; but he has refused to approve of plans for a line from Painsee Jct. to Cape Tormentine, N.B., 42 miles. (July, pg. 331.)

Central Ry. of Canada.—An injunction has been granted by a Quebec court, preventing the company from going on with the construction of the line, either on its own account or through contractors other than C. J. Wills and Sons. This firm has a general contract for building the line from Montreal to Midland, Ont., and has done considerable work. There have been some differences between the contracting firm and the company as to financing, which have been made the subject of action. The company claimed that the contractors were not proceeding with the work at a fast enough rate and proposed to put an end to the contract, and to let the work to another firm. The court held that the contractors were doing all they had agreed to do; that they were entitled to payment for the work already done, and that the company was not justified in attempting to get other contractors. (July, pg. 331.)

Edmonton, Dunvegan and British Columbia Ry.—J. D. McArthur, President, is reported to have recently stated at Edmonton, Alta., that the first section of this line from Edmonton to Mirror Landing on the Athabasca River will be opened for traffic in the fall. (May, pg. 219.)

Essex Terminal Ry.—The Board of Railway Commissioners has approved location plans for an extension of the line from lot 59, con. 1, to Turkey Creek, both in the Sandwich West township, Ont. Press reports state that surveys are being made for an extension of the line to Amherstburg, but the company's officials state that there is no present intention of extending the line there. (April, pg. 168.)

Esquimalt and Nanaimo Ry.—We are officially advised that the expenditures authorized on this line for this year amount to $1,461,630, distributed as follows:—Main line bridges, $164,000; track, $77,000; buildings, $26,000; transfer slip, etc., $44,630; terminals at Victoria, $250,000; construction of new branches, $900,000. Most of this work is in progress.

The 10 stall locomotive house under construction on the new terminals being laid out on the Songhees Reserve, Victoria, B.C., was expected to be completed July 30. A permit has been granted for the erection of a one story brick car repair shop, 52 by 152 ft., to cost $15,000, for which E. R. Dee is the contractor.

Plans for the building of a new passenger station, freight shed and yards, at Nanaimo, are being prepared, and local reports state that work on the new buildings will be started immediately.

A passenger train service was put in operation over the Cowichan Branch, June 18. This branch leaves the main line between Duncan and Somenos, and passes two stations—Tansor and Sahtlam—before reaching Cowichan Lake. It has been operated for freight purposes for a year.

H. E. Beasley, General Superintendent, completed an inspection of the lines in operation and under construction, July 7. He reports that track laying and ballasting on the extension from McBride Jct. to French Creek have been completed. The bridge over French Creek is practically completed, and it was expected to resume track laying on the extension towards the Qualicum River a few days after his visit.

An engineering party in charge of H. Schupp, is reported to have started out from Victoria, July 1, to make surveys for a line from Campbell River, towards the northeast end of Vancouver Island, about 150 miles. (July, pg. 331.)

Hartland and Miramichi Ry.—The New Brunswick Legislature has granted an extension of time for the building of the line from Hartland, Carleton County, to a point on the G.T. Pacific Ry., authorized to be built in 1910. E. A. Britton, D. H. Lamont, S. S. Miller, M. L. Hayward, H. A. Smith, are provisional directors. (July, 1912, pg. 547.)

Kettle Valley Lines.—The Board of Railway Commissioners has approved of location plans for this line from Hydraulic Summit, to Penticton, B.C., 20 miles.

A. McCullough, Chief Engineer, is reported to have stated, July 3, that over 3,000 men are employed on the sections of this line under construction, together with two steam shovels. Sixty miles of track have been laid south of Merritt, and 30 miles of track north from Midway. More than half the grading on the 180 miles intervening between the end of track on the two sections is done. It is expected to let contracts for the 54 miles between Otter Summit and Hope, which is to be built by the K. V. L. and used jointly with the Vancouver, Victoria and Eastern Ry. (July, pg. 331.)

Lake Erie and Northern Ry.—Grading is reported to have been completed between Waterford and Bloomsburg, Ont., and the construction of the bridge at Waterford, which is estimated to cost $65,000, has been started. Considerable work is also reported to have been done in the vicinity of Galt, on the section of the line north of Brantford. A map showing the route of the line through Brantford was filed with the city authorities July 5. It shows a route from Lorne bridge to the city limits at Eagle Place.

W. P. Kellett, General Manager, is reported to have stated, July 4, that it is expected to have the line opened from Brantford to Galt, by Oct. 1, and the section from Brantford to Port Dover, by June 1914. The line is being built to steam railway standards, but the story that it is to be exclusively a steam railway has no foundation in fact, as electricity will be the motive power used ultimately, though it may be operated by steam for a time at first. (July, pg. 331.)

Medicine Hat, Alta.—R. O. Sweezy, General Manager, Montreal Engineering Works, stated in Medicine Hat, Alta., that the coal carrying spur line, known as the Ansley spur line, will probably be electrified in the near future and operated in connection with the electric railway which his company is arranging to build in that city. (Jan., pg. 19.)

Minneapolis, St. Paul and Sault Ste. Marie Ry.—U.S. press reports state that the company has engineering parties west of Conrad, Mont., finishing up the uncompleted portion of Plaza extension survey. It is not expected, however, that any construction will be done this year. The reports further state that grading is being done in Sheridan County, in the northeastern part of Montana, and that tenders have been invited for the grading of a stretch of line south of the International Boundary to Barre, Valley County. It is said that this line is to be extended to a junction with the Alberta Ry. and Irrigation Co.'s line, terminating at Sweet Grass, which is now owned by the C.P.R. (April, pg. 169.)

New Brunswick Coal, Iron and Clay Co.—The New Brunswick Legislature has incorporated a company with this title, having power, among other things, to build railways or tramways to connect its properties with the C.P.R., and with shipping points on the St. John River, "but shall not be bound to operate such railways or tramways as a common carrier." The provisional directors are:—T. Bell, S. A. Payne, St. John, N. B.; H. W. Binning, Fredericton, N.B.; J. D. Mitchell, Lincoln, N.B.; J. W. Wilson, Welsford, N.B.

Northern New Brunswick and Seaboard Ry.—A contract under the act granting aid to certain railways, has been entered into by the Dominion Government with the company for the building of a line from the Drummond Mines at Austin Brook to the Intercolonial Ry. where it intersects the branch line from Bathurst station to Bathurst Harbor, N.S., 16.9 miles. This line has been operated for a couple of years, but the subsidy was only made available last session. (July, pg. 332.)

Pacific Great Eastern Ry.—A start was made with the construction of the 14 miles of line to connect North Vancouver with Howe Sound, B.C., July 1. It is expected that this will be completed and the line opened by July 1, 1914. At Howe Sound connection will be made with the Howe Sound and Northern Ry., which has been acquired by the P.G.E. Ry. From the terminus of that line construction is being pushed as far as Lillooet, and work is also in progress thence to the Fraser River. A subcontract on this latter section has been let to Rankin & Co. Orders have been placed in the U.S. for 20,000 tons of steel rails for the line, and the first shipment will be made from New York early in August. (July, pg. 332.)

Quebec Oriental Ry.—The Board of Railway Commissioners has ordered that this line be ballasted from Matapedia to New Carlisle, Que., with a complete lift of 6 ins. of ballast, and that fencing, gates, wooden culverts and all decayed portions of trestles be renewed, the whole work of be completed by Dec. 31.

Salisbury and Albert Ry.—An order has been issued by the Board of Railway Commissioners directing the company to put guard rails on all its bridges, 50 ft. long or over, by Aug. 20. (Jan., 1912, pg. 23.)

Timiskaming and Northern Ontario Ry.—Although no definite announcement has been made either by the Ontario Government or the T. and N.O.R. Commission, it is stated that the amount of the subsidy voted by the Dominion Parliament will be utilized for the reduction of gradients and the improvement of the line from North Bay to Liskeard, Ont., 113 miles. This was the line laid out by the late Ontario Government as a pioneer railway, consequently the gradients are high and the line winds about considerably. The extension northerly to Cochrane, the junction with the National Transcontinental Ry., was built to a higher standard, and, with the traffic now passing over the line an improvement on the original section, with a view of reducing operating expenses, is deemed advisable. The surveys for this have been completed, and the right of way for the necessary diversions is said to have been secured. Some details of the revision work to be undertaken were given on pg. 595 of our issue of Dec., 1912.

The grading of the branch from Iroquois Jct. to Iroquois Falls is reported to have been completed, and tracklaying is in progress. (July, pg. 332.)

Toronto, Hamilton and Buffalo Ry.—The Hamilton, Ont., City Council was notified July 8, that the company declined to join with the G.T.R. and the Canadian Northern Ry. in the suggested plans for a joint route and a union station, and that no inducement could be held out to get it to agree. The company desires to elevate its tracks along Hunter St., while the city authorities are in favor of depressing them. The proposals for a joint line were made in the hope that a compromise might be arranged. The Mayor advocates that application be made to the Board of Railway Commissioners for an order to compel the removal of the tracks from Hunter St., and to join with the G.T.R. and the C.N.R. in a common entrance along the G.T.R. cut for all railways.

The City Engineer, in a report to the Mayor, July 11, pointed out the advantages of the proposed joint route. So far as it affects the T.H. and B.R. its adoption would mean the building of about two miles of line on a 0.64 gradient. The City Engineer was instructed to prepare complete plans, and the City Solicitor is preparing the city's case for presentation to the Board of Railway Commissioners. (July, pg. 333.)

Association of Transportation and Car Accounting Officers.—At the recent summer meeting at Charlevoix, Mich., the following officers were elected for the current year:—President, F. Price, Superintendent of Passenger Service, G.T.R., Montreal; First Vice President, J. M. O'Day; Second Vice President, J. T. King; Secretary, G. P. Conard, New York; Treasurer, F. M. Luce. It was decided to hold the winter meeting at Galveston, Tex., Dec. 9 and 10.

Canadian Railways and Forestry Work.

Among those who took part in the Canadian Forestry Association's meeting at Winnipeg recently were George Bury, Vice President, C.P.R., Winnipeg, and J. S. Dennis, Assistant to the President, C.P.R., and head of the company's department of Natural Resources, Calgary, Alta.

Mr. Bury, in a paper which, owing to his unavoidable absence, was read by a delegate, dealt with the subject of "The Railways and Forest Protection." In this paper he pointed out that outside the Government, the C.P.R. had probably made the most elaborate study of the preservation of forests of any organization in the world. The company was carrying out on the forest tracts it owned, the system of caring, guarding and patrolling followed in the privately owned forests of Germany. This study and care of forests by the company was being made with a twofold purpose: to estimate the amount of traffic that may be derived from year to year in the territory adjacent to the line, and what production can be made from the timber and still preserve it to such an extent that in a hundred years the production will be so advanced that the revenue from the territory will be as great or greater than it is at present. The paper then went on to point out all that had been done by the railways to minimize the danger of fire from their locomotives, but there was still much to be done before all the dangers were eliminated. Sawmills, logging railways, camps, and other possible sources of danger must be regulated, and this could only be done by the adoption of a better system of patrolling. It had been estimated that the revenue derived by a railway from the production of one acre of heavily timbered land is equal to the accumulated traffic of an acre of agricultural land for 80 years.

Mr. Dennis addressed the convention on "Why the Railways Are Interested in Forestry." There were, he said, three reasons: (1) Because they were interested in all the great national questions which stand for the development of the country in which they had so much at stake; (2) because the railways were practically the greatest consumers of forest products in the Dominion; and (3) because lumber products formed a very large portion of their traffic. The railways used about five billion feet of lumber in the shape of wood for ties, bridges, fences, etc. There were in place on the C.P.R. western lines about 30,000,000 ties, the no. 1 ties consisting of 42 ft. each board measure. Then the railways required about 10% of the total of five billion feet to maintain what they had. Then there was the timber required for the extensions being made. The railways were therefore very practically interested in forestry. Were it not for the lumber traffic there would not be railways in certain districts. The original line had been built for the lumber traffic, and in certain districts it was to the continuance of this traffic by forest protection and reproduction that the company would have to look for a continuance of traffic. The railways were also interested in forestry from the standpoint of protection of the water supply. The C.P.R. was specially interested in forest protection on the eastern slope of the Rocky Mountains, because it was from thence that the supply of water would be drawn for the irrigation projects in Alberta, upon which the company was expending $20,000,000. In conclusion, Mr. Dennis said there was no question that was more readily listened to than the question of forestry expenditure for protection from fire along the line; for examination of the timber areas adjacent to the line, and for the purpose of getting timber requirements according to the intelligent forestry methods. He had no doubt that the other railway companies were doing their share of the work also, though perhaps the C.P.R. had the advantage of being a little farther on in the game. The railways felt that the work being done by the association was important, and would be pleased at all times to do their share in attaining the objects which the association had in view.

The Transportation Interests of Anticosti Island.

A short time ago the Montreal and Quebec Boards of Trade paid a visit to Anticosti Island, in the Gulf of St. Lawrence, which is owned by H. Menier, of Paris, France, making the trip on the R. and O. N. Co.'s steamboat Saguenay. The Quebec Chronicle, in an article on the trip, made the following references to the transportation interests:—

"The double deck pier, stretching 4,000 feet into the deep water of Ellis Bay, was first examined. This magnificent dock, constructed in the most solid manner, can be classed with any Government work of its kind in Canada and must have cost a vast sum, and yet it was built without Government aid and entirely of timber and materials found on the spot. The railway runs the entire length of the dock, and about midway runs up an incline to an upper level, where the pulpwood and other goods intended for shipment are automatically discharged into iron pockets and thence directly into the hatches of the steamers awaiting cargo, thus entirely saving all manual labor and ensuring rapid dispatch.

"On the arrival of the party, an ocean steamer, the Thyra Menier, was taking a cargo of rossed pulp wood in this manner, trains of cars running from the mill to the dock to keep the vessel supplied. All the Menier steamers are of British register and consequently fly the British flag.

"A train then carried the visitors to the end of the Anticosti Ry., which has 18 miles of main line and 9 miles of branch—27 miles in all. The railway is most substantially built, with substantial roadbed, steel rails of 55 and 70 lbs. to the yard, and well ballasted with the best of ballast, taken from gravel pits, where steam shovels were excavating ballast of a quality to make any railroad man happy. M. Menier has wisely made the railway of standard gauge, foreseeing the possibility of connecting it with the railway systems of the continent by means of a car ferry to Gaspe, only 50 miles distant. All along the railway are vast quantities of pulp wood awaiting shipment to the mill, where it is cut into short lengths and rossed or barked. About 35,000 cords of wood were made during the past winter, and a fleet of steamers is now busy carrying this wood, as fast as it passes through the barking mill, to the United States."

The Quebec Central Ry. has received two ten wheel locomotives from Canadian Locomotive Co.

Canadian Pacific Railway Construction, Betterments, Etc.

Atlantic Division.—The new locomotive house and machine shops under construction at McAdam Jct. are fully described on another page of this issue. H. Post, the general contractor, is reported to have sublet portions of the work as follows:—Masonry, Wm. Stevens, Woodstock, N.B.; roofing, J. E. Wilson, St. John, N.B.; lumber, Murray and Gregory, St. John.

Eastern Division.—Local press reports state that plans are being prepared by the C.P.R. for an electric railway between Lennoxville and Coaticook, Que., at an estimated cost of $500,000.

The Board of Railway Commissioners has refused the company permission to close Charlemagne St., Maisonneuve, as a part of some improvements which it is proposed to effect there, and it is said that a bridge will be built to carry the line across the street.

Campbellford, Lake Ontario and Western Ry.—The Board of Railway Commissioners has recommended the sanctioning by the Governor-in-Council of a lease of this line, now under construction from Glen Tay to near Agincourt, Ont., to the C.P.R.

Track has been laid on the Agincourt-Whitby section of the line, and a train was run over it July 4. Construction between Whitby and Oshawa is being pushed forward, and it is expected to have it completed at an early date. The remainder of the line to Glen Tay is almost finished, and it is expected to have the entire 183 miles in operation in the fall.

Ontario Division.—Press reports state that plans are being made for the building of a second track from near Lindsay station to the junction at the eastern end of the town, and the building of a cement wall along the Scugog River, beside the line.

Tenders are under consideration for the substructure of a subway at Yonge St., Toronto, in connection with the North Toronto grade separation work. B. Ripley is engineer in charge.

The Board of Railway Commissioners has approved of location of second track from near Islington to Guelph Jct., 29.1 miles. The contract for this work is being carried out by Johnson and Girouard, Ottawa, who have sublet portions of the grading to local men. The bridge work is nearly completed between the starting point west of Islington to Cooksville, and preparations for tracklaying between these points are being made. The work between Cooksville and Streetsville is rather heavier, but is well forward, as is also the grading from Streetsville to Guelph Jct.

Manitoba Division.—We are officially advised that the C.P.R. has let a contract to the John S. Metcalf Co., Ltd., Montreal, for extensive alterations at the Steel River house at Elevator D, Fort William, Ont., at an estimated cost of $45,000.

The construction of the double track bridge across the Red River in Kildonan, on the Bergen cutoff, is being rapidly pushed forward. The substructure, which consists of seven piers and two abutments, is being put in by the Foundation Co. These rest either on hardpan, or solid rock, in some cases the concrete rests on the arch, and in others on the piles, the concrete in all cases being carried 15 ft. below the bed of the river. The superstructure will be erected by the Dominion Bridge Co.

Saskatchewan Division.—J. G. Taylor, General Superintendent, is reported to have stated, July 4, that steel has been laid on the second track work to mileage 97 west of Regina; ties are in position on the 12 miles west of Chaplin, and grading is completed westerly to seven miles east of Swift Current. It is expected to have the second track completed into Swift Current by Sept. 30.

Tenders are under consideration for trenching, pipelaying and backfilling 3.3 miles of a 10 in. wooden pipe line at Weyburn, Sask. T. Martin is Division Engineer, Moose Jaw, Sask.

Alberta Division.—The C.P.R.'s new land maps show a line from Saskatoon, Sask., crossing the Moose Jaw-Macklin line at Milden, practically paralleling the Canadian Northern Ry. Goose Lake line, and connecting with the C.P.R. Swift Current-Bassano line at Empress, Alta.

Press reports state that plans are being prepared with a view to carrying out further improvements at Calgary station in the near future.

Press reports state that it is intended to carry the line from Weyburn, Sask., which is to connect with the Alberta Ry. and Irrigation Co.'s line at Stirling, westerly from the latter point, to a junction with the Crowsnest branch at Pincher.

The Board of Railway Commissioners has approved of location plans of the Suffield-Blackie branch from mileage 58.29 to 149.9.

In granting an order for the operation of traffic on the newly completed line from Strathcona to Jasper Ave., Edmonton, Alta., the Board of Railway Commissioners has limited the speed of the trains to 12 miles an hour when crossing the high level bridge over the North Saskatchewan River.

Calgary-Vancouver Second Track Work.—We are officially advised that a contract has been let to Foley Bros., Welch and Stewart for the construction of a tunnel five miles long under the Selkirk Mountains, B.C. George Bury, Vice President, is reported to have said in a recent interview: "The tunnel will be on a tangent and 1% grade, and when completed will be electrified so that trains will move through it by electricity instead of steam. The tunnel will come out of the Selkirk mountains on the west end about where the loop now is. The building of this tunnel will do away with 4.5 miles of snow sheds, will reduce the distance 4.5 miles, and will make the grade over the Selkirks 514 ft. less than it is at present. That is, the difference in the elevation of the tracks at Rogers Pass and of the tunnel will be 514 ft. To build the tunnel it is necessary to construct a new track on each side of it. The total length of the new track which will have to be constructed is 14½ miles, which, adding the tunnel, five miles, will make the distance of the tunnel and the new grade revision 19½ miles as against 24 miles by the present line. With the construction of this tunnel there will not be more than six miles of 2% gradient through the mountains."

The contractors have got a large quantity of their plant on the site, and expected to start work on the new tracks and approach cuts by July 30. A. C. Dennis, who is in charge, is reported to have stated that the first work would be the building of five miles of track, leading to the approaches. The tunnel will be driven from both sides by shifts working continuously night and day. It is expected to complete the boring in three years, and to have it in operation six months afterwards. A good deal, however, will depend upon the character of the rock and the quantity of water encountered.

The contractors for the three sections of second track work between Revelstoke and Taft, 24 miles; Westmore to Kamloops, 25 miles, and Kamloops westerly for nine miles, are, we are officially advised, Grant Smith & Co. and McDonnell, Ltd., Pacific Buildings, Vancouver, B.C.

Kootenay Central Ry.—The Board of Railway Commissioners has authorized the C.P.R. to open for traffic the section of the K.C.R. from Golden to Spillimacheen, B.C., 41 miles. A section from Colvalli, the junction point with C.P.R. Crowsnest branch, has been in operation for 23 miles for some time. The gap of about 100 miles between the terminal points of the two sections is under construction.

Pacific Division.—The Winch dock, having a frontage of 200 ft. on Burrard Inlet, was taken over by the C.P.R. July 1. It is proposed to build shed on it at once. (July, pg. 334.)

Dominion Government Railway to Hudson Bay

The line from the junction with the Canadian Northern Ry. at Pas, Man., over the bridge across the Saskatchewan River, has been laid with 80 lb. steel, and several side tracks have been laid on both sides of the bridge to facilitate construction work. The filling in of the trestle approaches to the bridge is being proceeded with. Track has been laid for some 15 miles beyond the bridge, but no ballasting has been done. This work is being pushed forward and it is expected that track will be laid to Thicket Portage, 185 miles, this year.

The locomotive house to be erected at Pas will at first consist of one unit of 12 stalls, but plans have been prepared for its ultimate enlargement to 44 stalls. Boiler shops, machine shops and other buildings will be located adjoining the locomotive house.

The resignation of H. T. Hazen, M. Can. Soc. C.E., from the position of engineer in charge of the terminal on Hudson Bay, will go into effect about the middle of August, when he expects to return from Port Nelson, for which place he sailed from Halifax, N.S., on the s.s. Bonaventure on July 2. The s.s. Bellaventure also sailed from Halifax, June 30, both vessels carrying men, plant and supplies to Fort Nelson. (July, pg. 337.)

Trunks as Freight.—The Board of Railway Commissioners has ordered that trunks be accepted by railway companies as freight, when securely corded. The Canadian Freight Association opposed the order on the ground that it would lead to objectionable traffic, that trunks were not accepted in any freight classification, and that they should not be accepted by Canadian railways unless they were boxed, had steel bands, or were wired to prevent possible pilfering, for which railway companies would be responsible.

Railway Finance, Meetings, Etc.

Canadian Pacific Ry. As some misconception may have arisen as to an issue of stock by the company, it has been officially announced that application was made to the Government last August, for permission to issue $75,000,000 stock, but consent has not yet been given, and that application is still before the Government. When consent is obtained, the directors may, or may not, issue that amount. Regarding the $60,000,000 of stock, now being taken up in lieu of the consolidated debenture stock, which was issued by the shareholders' authority, it is stated that three fifths is already paid up. The Government's consent to this issue was not necessary.

A London, Eng., cable, July 18, states that $20,000,000 of the $35,000,000 of C.P.R. mortgage bonds had been presented for redemption at that date.

Canadian Pacific Ry.—The company paid off in London, Eng., July 1, $35,000,000 of outstanding 5% mortgage bonds, two years ahead of the time they were due for redemption. There are now no mortgage bonds outstanding on the C.P.R. lines, but there are some small amounts outstanding on lines acquired by the company and amalgamated with it. Sir Thomas Shaughnessy, President, is quoted as stating that the company's indebtedness, consists of about $165,000,000 of debentures, and the common stock.

In connection with press reports that the C.P.R. contemplated the issuing of a further $60,000,000 of common stock early in 1914, Sir Thomas Shaughnessy stated July 9:—"No new issue of common stock is contemplated, because the proceeds of any such issue could not be utilized to advantage, ample provision having already been made for the company's money requirements for a long time to come."

Grand Trunk Pacific Ry.—At a special meeting of shareholders at Montreal, July 16, a bylaw was passed authorizing the issue of $15,000,000 debentures under the provisions of the Grand Trunk Pacific Act passed at the last session of the Dominion Parliament.

Grand Trunk Ry.—A cablegram to the Montreal Star, July 14, stated that the latest effort to secure control of the G. T. R. and have the headquarters in Canada had failed, a speculative group which had been working for that end for some time having got out of its depth, and that many options would not be exercised.

International Ry. of New Brunswick.—Press reports state that negotiations are in progress on the part of the Dominion Government and the C.P.R., for acquiring this line. The I.R. of N.B., which is practically owned by Thomas Malcolm, extends from Campbellton to St. Leonards, N.B., 104 miles. It has a charter to build a bridge across the Restigouche River and connect with the Intercolonial Ry. and the Quebec Oriental Ry. at Matapedia, Que.; and also the building of a bridge across the St. John River to give connection between the terminus at St. Leonards, and the U.S. lines at Van Buren, Me.

Montreal and Vermont Jct. Ry.—Following are the directors for the current year,—President, E. J. Chamberlin; Vice President, G. C. Jones; Auditor, W. G. Crabbe; Secretary and Treasurer, A. H. Gilmour; Assistant Secretary and Treasurer, W. H. Chaffee; other directors, E. C. Smith and C. W. Wilkes. The Managing Directors are, E. J. Chamberlin, W. Wainwright and G. C. Jones.

Napierville Jct. Ry.—Following are the directors for the current year,—President, L. F. Loree; Vice Presidents, C. S. Sims and W. H. Williams; Secretary, L. J. Beique; other directors, G. T. Hartt, F. L. Beique, F. A. Beique, and R. Adair.

Quebec Oriental Ry.—Meetings of the holders of 5% first mortgage gold bonds and of 5% second mortgage bonds of the Matapedia section of the company's line will be held in London, Eng., Aug. 13, to increase the amount of the issue of 5% prior lien mortgage gold bonds on the section from £50,000 to £100,000.

Temiscouata Ry.—Net earnings, for April, $9,710; for May, $4,969; aggregate for 11 months ended May 31, $61,889.

White Pass and Yukon Route.—Earnings from Jan. 1 to June 14, $272,751, against $223,074 for the same period 1912.

Great Northern Railway Lines in Canada.

Vancouver, Victoria and Eastern Ry. and Navigation Co.—J. H. Kennedy, Chief Engineer, is reported to have stated, June 30, that satisfactory progress was being made with construction on the section of the line between Coalmount and Otter Summit. Four steam shovels and a large force of men were at work. This section will connect with the joint section to Hope, which is to be built by the Kettle Valley Lines.

Victoria and Sidney Ry.—F. Van Sant, Superintendent, is reported to have stated recently that the work of improving the roadbed will be put in hand at an early date. The line will be regraded in part, and rails will be laid, and additional ballast added at an a cost of $100,000. New turntables are being built at Victoria and Sidney, to handle a gasoline electric car which will shortly be added to the rolling stock. (May, pg. 224.)

Enlargement of Angus Shops, Canadian Pacific Railway

The following extensive additions are being made to the Angus Shops, Montreal, the percentages given in connection with some of the works showing the amount of work completed to July 16 as advised us officially:—

Steel passenger and freight car shops, comprising material shops, 182 by 100 ft., and 209 by 100 ft.; passenger car shop 202½ by 110 ft.; freight car shop 405 by 72 ft.; transfer table 80 by 75 ft. 80% done; bolt and nut shop. 420 by 60 ft. 25% done; new shipping platform for wheel foundry 100 by 72 ft.; extension to scrap platform and shed 60 by 50 ft.; extension to pattern storage, 60 by 50 ft.; addition to car ovens, 3 new ovens; extension to locomotive shops, 594 by 80 ft.; 20% done; addition to tube rack; extension to office building, 80 by 75 ft.; extension of power house, 20 by 62 ft. 11 ins.; 30% done; extension of upholstering shop, 80 by 75 ft., 30% done; extension to frog shop, finished.

Canadian Northern Ry. Elevators.—We are officially advised that there is nothing in the press report that the Canadian Northern Ry. is to erect a series of grain elevators between Port Arthur and Winnipeg, and that beyond the recent addition of 2,500,000 bush. to its elevator capacity at Port Arthur, nothing is at present being done in the matter of grain storage.

Grand Trunk Railway Betterments, Construction, Etc.

Southern New England Ry.—An application was made to a [illegible] Mass., recently, for the [illegible] a receiver for the company. The applicant, J. Marsch, of Chicago, Ill., stated that he had expended $1,500,000 on carrying out his construction contract, on account of which he had received $500,000. A considerable portion of the balance had accumulated through the stoppage of the work. The question of the court's jurisdiction was raised, among other points, and the hearing of the application was adjourned.

Central Vermont Ry.—A contract is reported to have been let to J. E. Cashman, Burlington, Vt., for the construction of a concrete arch and viaduct over the C.V.R. tracks and the river at Winooski. The structure will have a total length of 278 ft. 8 ins., including a 93 ft. arch over the river.

Montreal Track Elevation Plans.—The Montreal City Council decided, July 14, to consult with the Board of Railway Commissioners with a view of seeing what steps could be taken to compel the company to proceed with the work of elevating the tracks from Bonaventure station. The work is estimated to cost $10,000,000, towards which the city is authorized by the Quebec Legislature to contribute $2,000,000.

Proposed New Line to Ottawa.—Press reports state that negotiations are in progress for obtaining running rights over the Ottawa and New York Ry., from Cornwall to Ottawa, Ont. The object aimed at is to secure a shorter route than is at present available between Toronto and Ottawa. (July, pg. 337.)

Station and Yard Improvements at Stratford.—G. A. Mitchell, Superintendent of Bridges and Buildings, was in Stratford, Ont., July 16, completing arrangements for the erection of a new station. Foundation work was started at the Shakespeare St. site two years ago, but was stopped pending the settlement of some difficulties. Since then the plans have been somewhat altered, and the new building will be a larger structure than was previously intended. The yard accommodation is to be rearranged, to meet the altered conditions at the station.

Tests on Locomotive Fireboxes.—As the result of a series of tests, it has been shown that, 1, the outwardly inclined water leg is the most desirable as far as the water circulation is concerned; 2, the direction of rolling of the sheet affects its ability to withstand the strains imposed in service, and that the direction of rolling should be specified; 3, the relative values of the different steels to withstand these strains are in the order of nickel, acid and basic; 4, the lowest specification carbon content and tensile strength requirement should be asked for and accepted; and, 5, the single piece firebox as now applied is a mistake.

Reports indicate that the use of lignite as a locomotive fuel is increasing in the northwestern portion of the United States. This is due to the high cost of good coal, and the proximity to large areas of lignite. The latter gives very good results when briquetted, as the heating value is increased, and the rapid deterioration incidental to raw lignite when stored, is largely decreased. The heat value of briquetted lignite is about 9,000 b.t.u.

Canadian Northern Railway Construction, Betterments, Etc.

[illegible]

[illegible]

Canadian Northern Montreal Tunnel and Terminal Co.—[illegible]

Canadian Northern Ontario Ry.—[illegible]

[illegible]

[illegible]

[illegible]

[illegible] Canadian Northern Ontario Ry., for the building of the line from Ottawa to Port Arthur, Ont., 910 miles.

Canadian Northern Ry.—[illegible]

[illegible] City Council, [illegible] of a new station on Des Meurons St., [illegible]

[illegible] complete the [illegible] to Battle- [illegible]

[illegible]

[illegible]

[illegible]

Canadian Northern Pacific Ry.—[illegible]

[illegible]

[illegible]

[illegible] completed on the Lulu Island branch, [illegible] early in August.

The necessary bonds have been deposited with the City of Vancouver under the False Creek reclamation agreement; the Dominion Government has granted permission to fill in the centre [illegible] taken by the City Council to hand over the property to the Company. Speaking [illegible] that the proceeds of the $10,000,- [illegible] immediate starting of this work of reclamation.

Vancouver Island Lines. The Premier in a recent speech at Vancouver, stat- [illegible] tion of the line on Vancouver Island, extending from Victoria to Alberni, would be turned over to the operating department [illegible]

Tenders are under consideration for the building of the following lines: From Victoria to Deadman's River, five miles; and from Regina Ave., Victoria, [illegible] miles. The work to be done includes clearing, grubbing, grading, bridges, trestles, culverts, masonry and fencing. (July, pg. 335.)

Dominion Railway Subsidy Agreements.

[illegible] into agreements with the following [illegible] tion of lines, as mentioned:—

[illegible] Columbia boundary, at, or in, the Yellow- [illegible]

[illegible] miles; and from Toronto to Ottawa, 250 miles.

[illegible]

Canadian Car Service Bureau.—[illegible] and W. J. Collins, Assistant Manager, Toronto.

The C.P.R. [illegible] Staff's Annual [illegible] by the [illegible]

Mainly About Transportation People.

W. H. DARCY, General Claims Agent, Western Lines, C.P.R., Winnipeg, is spending a vacation in Europe.

SIR WILLIAM MACKENZIE left Toronto, July 15, for England, sailing from Quebec by the s.s. Royal Edward, July 16.

SIR THOS. G. SHAUGHNESSY returned to Montreal, July 17, after spending a short holiday at his summer home at St. Andrews, N.B.

GRANT HALL, General Manager, Western Lines, C.P.R., Winnipeg, whose illness was reported in our last issue, has recovered and returned to his office.

J. H. PANNEN, formerly agent and operator, Don Station, C.P.R., Toronto, has entered the hotel business, having recently purchased the Lambton House, Lambton, Ont.

GEORGE BURY, Vice President, C.P.R., addressed the Canadian Forestry Association Convention, at Winnipeg, July 9, on the railways and forest protection.

D. N. MILLER, Superintendent, Hamilton St. Ry., Hamilton, Ont., was instantly killed on July 23, when his automobile went over a steep bank in the dark.

M. McDONALD, heretofore Vice President and General Manager, Maine Central Rd., has been appointed President, Boston and Maine Rd. and Maine Central Rd., vice C. S. Mellen, resigned.

F. PRICE, Superintendent of Passenger Service, G.T.R., Montreal, has been elected President of the Association of Transportation and Car Accounting Officers for the current year.

SCOTT GRIFFIN, European Manager, Canadian Northern Ry., and Canadian Northern Steamships Ltd., London, Eng., and Mrs. Griffin, arrived in Canada, July 9, for the remainder of the summer.

Count Jacques de Lesseps, and the Countess, a daughter of SIR WILLIAM MACKENZIE, with their two sons, arrived in Canada for the summer, July 9. It is said that they will make their home in Canada.

SIR THOMAS TAIT, President, Fredericton and Grand Lake Coal and Ry. Co., was in Toronto, July 19, to attend the funeral of his brother-in-law, Major Cockburn, V.C., who was killed by a kick from a horse, on his ranch near Maple Creek, Sask.

W. M. FLYNN, station agent, Prince Edward Island Ry., Cardigan, was presented with a gold headed cane and a pipe and case, by a number of local residents, July 3, on his removal to Georgetown, where he has been transferred to a similar position.

GEORGE STEPHEN, General Freight Agent, Canadian Northern Ry., Winnipeg, was born at Montreal, July 5, 1876, and not in 1870, as stated in Canadian Railway and Marine World for July, under "Birthdays of Transportation Men in July."

J. S. PLAYFAIR, one of the founders of the Muskoka Navigation Co., whose death was mentioned in our last issue, left an estate of $109,192. Three sons, one of whom is Jas. Playfair, Vice President and Managing Director, Richelieu and Ontario Navigation Co., are executors.

C. S. MELLEN, President, New York, New Haven and Hartford Rd., Boston and Maine, Rd., and Maine Central Rd., resigned the presidency of the latter two companies, early in July, in order to devote his time to the affairs of the first named. On July 17, he resigned his position on the N.Y., N.H. & H. Rd.

ALFRED PRICE, General Superintendent, Alberta Division, C.P.R., was entertained to dinner, at Calgary, July 8, prior to his leaving for his new position at Montreal, by the local Y.M.C.A. and the Round Table Club, and presented with a loving cup, and a set of Browning's works, as an appreciation of his work connected with the association.

C. J. O'DOHERTY, who has been appointed Storekeeper, G.T.R., Ottawa, was born there, July 28, 1878, and entered railway service Oct. 1, 1895, since when he has been, to Dec., 1898, clerk, Motive Power Department, Canada Atlantic Ry., Ottawa; Jan. 1, 1899, to May 31, 1913, chief clerk, Stores Department, G.T.R., Ottawa.

J. B. LAMBKIN, formerly Assistant General Passenger Agent, Intercolonial Ry., Halifax, N.S., has been appointed a Government agent in connection with the carrying out of the recently enacted laws relating to white slavery. He acts under the direction of the Chief of Dominion Police, with headquatrers at Montreal.

Alfred Price.
Assistant General Manager, Eastern Lines, Canadian Pacific Railway.

RT. HON. ALFRED LYTTLETON, K.C., M.P., who died in London, Eng., July 4, was, with the late P. S. Archibald, of Moncton, N.B., a member of the board of arbitration appointed in 1904, to deal with the disputes between the Newfoundland Government and the Reid Newfoundland Co., arising out of the construction and operation of the railway in that colony.

W. G. BARNWELL, who was recently appointed Assistant Freight Traffic Manager, Atchison, Topeka and Santa Fe Rd., Coast Lines, San Francisco, Cal., was born at Danville, Que., Apr. 13, 1865, and commenced railway work in 1881 as agent and clerk in the office of Auditor of Freight Accounts, Canada Atlantic Ry. [illegible] been in the U. S.

G. A. AIRD, General Agent, Freight [illegible] funeral taking place from his brother's house (John Aird, Assistant General Manager, Canadian Bank of Commerce), [illegible] Aird, who was Mechanical Foreman of the old Northern Ry. at Toronto.

A. C. O'NEIL, who has been appointed Travelling Freight Agent, G.T.R., London, Ont., was born at Point Edward, Ont., Nov. 30, 1886, and entered G.T.R. service, July 15, 1904, since when he has been, to Mar. 15, 1909, clerk at Point Edward and Sarnia Tunnel, Ont.; Mar. 15, 1909, to Nov 1, 1912, cashier at same points; Nov. 1, 1912, to May 1, 1913, chief clerk and General Agent, same points.

JAMES CONMEE, ex-M.P., of Port Arthur, Ont., who died at Prescott, Arizona, July 23, after a long illness, was one of the early contractors on the C.P.R. main transcontinental line, having had several contracts along the north shore of Lake Superior, in connection with which he had protracted litigation with the company. He also had contracts on the Canadian Northern Ry., and the Algoma Central and Hudson Bay Ry.

R. G. McNEILLIE, who has been appointed Assistant General Passenger Agent, Western Lines, C.P.R., Winnipeg, was born at Lindsay, Ont., July 1, 1883, and entered C.P.R. service, Oct. 1, 1901, since when he has been, to April 25, 1906, stenographer and clerk, General Passenger Department, Winnipeg; April 25, 1906, to Oct. 20, 1909, chief clerk, General Passenger Department, Winnipeg; Oct. 20, 1909, to April 15, 1910, District Passenger Agent, Nelson, B.C.; April 15, 1910, to July 1, 1913, District Passenger Agent, Calgary, Alta.

A. A. GOODCHILD, who has been appointed General Storekeeper, Lines East of Fort William, Ont., C.P.R., Montreal, was born in London, Eng., June 3, 1866, came to Canada, June, 1886, and entered railway service, July, 1886, since when he has been, to Jan. 1, 1888, in Audit Department, G.T.R.; Jan. 1, 1888, to Oct. 2, 1899, in Comptroller's office, C.P.R.; Oct. 2, 1899, to Jan., 1900, Assistant Auditor of Disbursements, C.P.R.; Jan., 1900, to Dec. 28, 1904, Auditor of Statistics, C.P.R.; Dec. 28, 1904, to July 1, 1913, Auditor of Stores and Mechanical Accounts, C.P.R.; July 1 to 16, 1913, acting General Storekeeper, Lines East of Fort William, Ont., C.P.R., Montreal.

H. H. MELANSON, whose appointment as acting General Passenger Agent, Intercolonial Ry. and Prince Edward Island Ry., Moncton, N.B., was mentioned in our last issue, was born at Scadouc, N.B., Mar. 99, 1872, and entered Intercolonial Ry. service, Nov. 18, 1889, since when he has been, to Aug., 1892, clerk in Mechanical Department; Aug., 1892, to Dec., 1899, clerk in Passenger Department; Dec., 1899, to Mar., 1901, chief clerk, Passenger Department; Mar., 1901, to May, 1903, General Baggage Agent; May, 1903, to Nov., 1909, chief clerk, Passenger Department; Nov., 1909, to May, 1913, Assistant General Passenger Agent, all at Moncton, N.B.

R. G. McNEILLIE, who has been appointed Assistant General Passenger Agent, Western Lines, C.P.R., Winnipeg, was born at Lindsay, Ont., July 1, 1882, and entered C.P.R. service Oct. 1, 1901, since when he has held various positions in the Passenger Department, Winnipeg, and was from 1907 to Oct. 20, 1909, chief clerk, General Passenger Agent's office: Oct. 20, 1909, to Apr., 1910, District Passenger Agent, Nelson, B.C.; Apr., 1910, to July, 1913, District Passenger Agent, Calgary, Alta. Prior to his leaving Calgary, July 8, the local staff presented him with a walrus suit case and a fitted club bag, also a silver mesh purse for Mrs. McNeillie.

D. T. MAIN, who has been appointed Master Mechanic, British Columbia Division, C.P.R., Vancouver, and whose portrait appears in this issue, was born at Kirkintilloch, Scotland, and came to Canada in 1903, when he entered Mackenzie, Mann & Co.'s service as draughtsman, and in 1904 transferred to C.P.R. service, and was, from 1907 to Mar., 1908, Locomotive Foreman, Minnedosa, Man.; Mar., 1908, to Mar., 1910, Locomotive Foreman, Cranbrook, B.C.; Mar., 1910, to Jan., 1912, District Master Mechanic, District 1, British Columbia Division, Nelson; Jan., 1912, to June 30, 1913, Master Mechanic, Saskatchewan Division, Moose Jaw.

W. B. SMITH, Managing Director of the Dominion Transport Co., Montreal, has been appointed a Justice of the Peace there. He has been connected with the railway cartage business since the opening of the Great Western Ry. between Hamilton and London, Ont., first with Hendrie and Shedden, continuing with the Shedden Co., then the Montreal Cartage Co., later with a cartage company in connection with the Quebec, Montreal, Ottawa and Western Ry., now part of the C.P.R., and since the formation of the Dominion Transport Co., 25 years ago, he has been General Manager, and latterly Managing Director of that company, which conducts the cartage business of the C.P.R.

A. E. ROSEVEAR, who has been appointed General Freight Agent, G. T. Pacific Ry. and G. T. Pacific Coast Steamship Co., Winnipeg, was born at Montreal, Feb. 20, 1863, and entered G.T.R. service in 1879, since when he has been, to 1885, clerk in General Superintendent's office, Montreal; 1885 to 1890, stenographer to General Manager; 1890 to 1892, accountant, G.T.R. West Shore Fast Freight Line, Chicago, Ill., and Detroit, Mich.; 1892 to 1898, accountant, Reading Despatch Line, Detroit, Mich.; Oct. 1, 1898, to Apr., 1908, Freight Claims Agent, G.T.R., Montreal; Apr. 20, 1908, to Oct., 1912, Assistant General Freight Agent, Montreal; Oct., 1912, to June 28, 1913, Assistant to the Vice President (Traffic), Montreal.

G. H. EATON, Assistant Master Car Builder, Western Lines, C.P.R., Winnipeg, who died there, June 30, and whose portrait appears in this issue, was born in Staffordshire, Eng., June 9, 1860, and entered railway service in 1876, since when he had been, to 1879, carpenter, Brockville and Ottawa Ry., Brockville, Ont.; 1879, carpenter, G.T.R., Toronto; 1879 to 1884, Credit Valley Ry., Toronto; 1884 to 1887, yard foreman of repairs and cleaning, C.P.R., Toronto; 1887 to 1888, Shop Foreman, C.P.R., Toronto; 1888 to 1893, Car Foreman, C.P.R., Toronto; 1893 to 1897, General Car Foreman, C.P.R., Hochelaga Shops, Montreal; 1897 to Aug., 1905, General Car Foreman, C.P.R., Farnham, Que., and from Aug., 1905, Assistant Master Car Builder, Western Lines, C.P.R., Winnipeg.

L. O. ARMSTRONG, who has been appointed Colonization Agent, Department of Natural Resources, C.P.R., Montreal, was born at Manor House de Lanaudiere, Maskinonge Co., Que., and entered railway service in May, 1868, with the Ohio and Mississippi Rd. He was, from July, 1880, to July, 1881, Land Commissioner, Manitoba and South Western Ry., Winnipeg; and on the acquirement of that line by the C.P.R. in 1881, he was appointed Right of Way Agent, C.P.R., under A. B. Stickney, General Superintendent, Winnipeg. Since Dec., 1883, he has occupied the positions of Colonization Agent, Colonization and Tourist Agent, Colonization and Industrial Agent, and on the formation of the Department of Natural Resources, he was attached to that department, with office at Montreal.

C. E. DEWEY, who has been appointed Freight Traffic Manager, G.T.R., Montreal, was born at Cheshunt, Eng., Oct. 2, 1873, and entered G.T.R. service, Nov., 1888, since when he has been, to Apr., 1896, clerk, Toronto; Apr., 1896, to Aug., 1897, chief clerk to Division Freight Agent, Stratford, Ont.; Aug., 1897, to Aug., 1899, chief clerk to Division Freight Agent, Hamilton, Ont.; Aug., 1899, to July, 1902, Division Freight Agent, Stratford, Ont.; July, 1902, to July, 1907, Division Freight Agent, Toronto; July, 1907, to Apr., 1908, Assistant General Freight Agent, Montreal; Apr., 1908, to May 1, 1911, General Freight Agent, Central Vermont Ry., St. Albans, Vt.; May 1, 1911, to June 28, 1913, General Freight Agent, G.T. Pacific Ry. and G.T. Pacific Coast Steamship Co., Winnipeg.

C. A. Hayes,
General Traffic Manager, Canadian Government Railways.

M. J. POWER, General Storekeeper, C.P.R., Montreal, died there, July 4, after 14 weeks illness due to internal trouble. He was buried July 7, when the whole Stores Department was closed for an hour. He was born at Montreal, June 19, 1877, and entered C.P.R. service Mar. 16, 1891, since when he had been, to Nov., 1893, office boy, etc., General Passenger Department, Montreal; Nov., 1893, to May, 1897, stenographer, same department; May, 1897, to June, 1898, secretary to General Passenger Agent, Montreal; June, 1898, to Aug., 1901, secretary to Passenger Traffic Manager, Montreal; Aug., 1901, to July, 1908, secretary to the President; July, 1908, to July, 29, 1912, chief clerk and private secretary to the President; July 29, 1912, to the time of his death, General Storekeeper, Montreal.

H. DARLING, whose appointment as Locomotive Foreman, G.T. Pacific Ry., Nicholl, B.C., was mentioned in our last issue, was born in Northumberland, Eng., July 27, 1873, and entered railway service July, 1890, since when he has been, to July, 1905, fitters' assistant and locomotive fireman, London and North Western Ry., St. Helens and Garston, Eng.; Jan. 15, 1906, to May 4, 1907, machinist, G.T.R., Turcot roundhouse, Montreal; May 15, 1907, to Aug. 4, 1909, machinist, G.T.R. erecting shops, Montreal; Aug., 17, 1909, to Sept. 10, 1911, machinist, G.T. Pacific Ry., Rivers, Man., and Wainwright, Alta.; Dec. 4, 1911, to Jan. 20, 1912, machinist, Foley, Welch and Stewart, G.T.P.R. Contractors, Prince Rupert, B.C.; Jan. 22, 1912, to May, 1913, machinist, G. T. Pacific Ry., Prince Rupert, B.C.

C. MURPHY, who has been appointed General Superintendent, Manitoba Division, C.P.R., Winnipeg, and whose portrait appears in this issue, was born at Prescott, Ont., Nov. 20, 1865, and entered C.P.R. service in 1883, since when he has been, to 1885, operator; 1885 to 1890, chief operator and dispatcher; 1890 to 1899, Chief Dispatcher, Ottawa; 1899 to June, 1900, acting Superintendent, and June, 1900 to 1902, Superintendent Chapleau, Ont.; 1902 to Nov., 1903, Superintendent North Bay, Ont.; Nov., 1903, to Feb., 1908, Superintendent, District 2, Ontario Division; Feb., to June, 1908, relieving General Superintendent, at North Bay, Ont., and Montreal; June, 1908, to Sept. 30, 1910, General Superintendent, Eastern Division, Montreal; Sept. 30, 1910, to July 15, 1913, General Superintendent of Transportation, Eastern Lines, Montreal.

R. A. GAMBLE, who has been appointed General Yardmaster, C.P.R., Winnipeg, was born at Dublin, Ireland, Mar. 1, 1876, and entered C.P.R. service Feb. 1, 1901, since when he has been, to May 15, 1903, checker, Winnipeg; May 15, 1903, to Feb. 11, 1904, chief night yard clark, Winnipeg; Feb. 11, 1904, to Oct. 15, 1906, chief clerk to General Yardmaster, Winnipeg: Oct. 15, 1906, to Sept. 11, 1907, Assistant Yardmaster, Winnipeg; Sept. 11 to Nov. 25, 1907, Night Yardmaster, Winnipeg; Nov. 25, 1907, to Jan. 26, 1908, chief clerk, Car Service Department, Western Lines, Winnipeg; Jan. 26, 1908, to Apr. 1, 1910, Inspector, Refrigerator Service, Western Lines, Winnipeg; Apr. 1, 1910, to May 1, 1911, Fuel Agent, Alberta Division, Calgary; May 1, 1911, to July 1, 1912, Car Service and Fuel Agent, Saskatchewan Division, Moose Jaw; July 1, 1912, to July 1, 1913, Assistant General Yardmaster, Winnipeg. Prior to entering railway service, he was engaged in water transportation service, in various capacities, from deck hand to chief mate.

D. C. COLEMAN, who has been appointed General Superintendent, Alberta Division, C.P.R., Calgary, was born at Carleton Place, Ont., July 9, 1879, and entered C.P.R. service, Nov., 1899, since when he has been, to Jan., 1900, stenographer, Assistant Engineer's office, Fort William, Ont.; Jan. to July, 1900, secretary to Superintendent, Fort William, Ont.; July to Sept., 1900, secretary to General Superintendent, Winnipeg; Sept., 1900, to Feb., 1901, secretary to Superintendent, Fort William, Ont.; Feb. to Mar., 1901, secretary to Superintendent, Cranbrook, B.C.; Mar., 1901, to May, 1902, chief clerk, Superintendent's office, Cranbrook, B.C.; June 1, 1902, to Apr., 1903, chief clerk, General Superintendent's office, Lake Superior Division, North Bay, Ont.; Apr., 1903, to Feb., 1904, General Superintendent's accountant, Lake Superior Division, North Bay, Ont.; Feb., 1904, to Mar., 1907, chief clerk, General Superintendent's office, Central Division, Winnipeg; Mar. to June, 1907, chief clerk, Assistant General Manager's office, Western Lines, Winnipeg; June, 1907, to Nov. 30, 1908, Superintendent, District 3, Pacific Division, Nelson, B.C.; Nov. 30, 1908, to Feb. 14, 1912, Superintendent of Car Service, Western Lines, Winnipeg; Feb. 14 to Mar. 25, 1912, acting General Superintendent, Manitoba Division, Winnipeg; Mar. 25 to Apr. 1, Superintendent of Car Service, Western Lines, Winnipeg; Apr. 1 to July 15, General Superintendent, Manitoba Division, Winnipeg.

ALFRED PRICE, who has been appointed Assistant General Manager, Eastern Lines, C.P.R., Montreal, was born at Toronto, Dec. 6, 1861, and entered railway service, Sept., 1879, since when he has been, to 1881, operator, messenger and clerk, Credit Valley Ry.; 1881 to 1882, car accountant, same road, Toronto. He remained with the C.P.R. when it took over the Credit Valley Ry. in 1882, since when he has been, to 1884, operator and relief dispatcher, Toronto; 1884 to July, 1888, dispatcher, Toronto; July, 1888 to May, 1896, car distributor, Toronto; May, 1896 to Aug., 1898, car distributor and Chief Dispatcher, Toronto; Aug., 1898, to May, 1901, Superintendent, Toronto; May, 1901, to Sept., 1902, Superintendent, Districts 8 and 9, Toronto; Sept., 1902 to May, 1903, Superintendent, Districts 10 and 11, Toronto; May, 1903 to 1905, Superintendent, Fort William, Ont.; 1905 to Feb., 1907, Superintendent of Transportation, Western Lines, Winnipeg; Feb. to Dec., 1907, General Superintendent, Central Division, Winnipeg; Dec., 1907, appointed General Superintendent, Western Division, Calgary, Alta., and in July, 1910, when the Western Lines were reorganized into four, instead of three, grand divisions, he was appointed General Superintendent, Alberta Division, Calgary.

Birthdays of Transportation Men in August.

Many happy returns of the day to:—

V. T. Bartram, ex-Purchasing Agent, Timiskaming and Northern Ontario Ry., now of Toronto, born at Ottawa, Aug. 2, 1880.

W. E. Bishop, ex-General Agent, Niagara Navigation Co., Hamilton, Ont., born at Brantford, Ont., Aug. 10, 1868.

J. F. Chapman, Manager, Thousand Islands Ry., and Oshawa Ry., Gananoque, Ont., born at Frankford, Hastings Co., Ont., Aug. 25, 1863.

A. E. H. Chesley, General Accountant, Dominion Atlantic Ry., Kentville, N.S., born near Annapolis Royal, N.S., Aug. 27, 1877.

A. B. Chown, Travelling Passenger Agent, G.T.R., Pittsburgh, Pa., born at Belleville, Ont., Aug. 4, 1887.

C. H. N. Connell, Engineer Maintenance of Way, Canadian Northern Quebec and Quebec and Lake St. John Rys., Quebec, born at Woodstock, N.B., Aug. 26, 1876.

F. Barlow Cumberland, ex-Vice President, Niagara Navigation Co., Port Hope, Ont., born at Portsmouth, Eng., Aug. 5, 1846.

E. L. Desjardins, Assistant Superintendent, Montreal and Ste. Flavie District, Intercolonial Ry., Riviere du Loup, Que., born at St. Jean Port Joli, Que., Aug. 1, 1859.

F. L. Ellingwood, Superintendent Building Construction, C.P.R., Montreal, born at Eastport, Me., Aug. 6, 1863.

G. H. Ham, Publicity Department, C.P.R., Montreal, born at Trenton, Ont., Aug. 23, 1847.

W. P. Hinton, General Passenger Agent, G.T.P.R., Winnipeg, born at Hintonburg, Ont., Aug. 30, 1871.

R. Kerr, ex-Passenger Traffic Manager, C.P.R., born at Toronto, Aug., 1845.

E. Lait, General Yardmaster, Winnipeg Joint Terminals, born at Toronto, Aug. 23, 1889.

J. D. McDonald, Assistant General Passenger Agent, G.T.R., Chicago, Ill., born at Toronto, Aug. 27, 1855.

T. McHattie, Master Mechanic, Eastern Division, G.T.R., Montreal, born at Dufftown, Banffshire, Scotland, Aug. 8, 1854.

M. K. McQuarrie, Resident Engineer, District 1, British Columbia Division, C.P.R., Revelstoke, born at Sault Ste. Marie, Ont., Aug. 17, 1884.

The Late G. H. Eaton.

J. A. Marsh, Trainmaster, British Columbia Electric Ry., New Westminster, B.C., born at Dresden, Ont., Aug. 16, 1876.

J. M. Maver, Contracting Freight Agent, Northern Pacific Ry., Montreal, born at Toronto, Aug. 9, 1884.

W. J. Meakin, Locomotive Foreman, C.P.R., Castor, Alta., born at Toronto, Aug. 22, 1869.

C. Montgomery, Master Mechanic, Pere Marquette Rd., St. Thomas, Ont., born near London, Ont., Aug. 29, 1860.

W. E. Mullins, General Manager, Costa Rica Division, United Fruit Co., San Jose, Costa Rica, born at Stratford, Ont., Aug. 13, 1870.

F. H. Phippen, K.C., General Counsel, C.N.R., Toronto, born at Belleville, Ont., Aug. 26, 1862.

W. M. Porteous, Freight Agent, C.P.R., St. Louis, Mo., born at Edinburgh, Scotland, Aug. 3, 1857.

J. F. Richardson, Superintendent Telegraphs, British Columbia Division C.P.R., Vancouver, born at Granby, Que., Aug. 23, 1861.

W. G. Ross, Chairman Montreal Harbor Commissioners, born at Montreal, Aug. 6, 1873.

W. Le B. Ross, Local Treasurer, G.T. Pacific Ry., Winnipeg, born at Ottawa, Ont., Aug. 9, 1868.

Major Salt, Car Foreman, C.P.R., Toronto, born at Lichfield, Eng., Aug. 12, 1859.

F. C. Salter, European Traffic Manager, G.T.R., and Canadian Ex. Co., London, Eng., born at Sarnia, Ont., Aug. 31, 1863.

C. R. Scoles, General Manager, Quebec Oriental Ry., New Carlisle, Que., born at Grantham, Lincoln, Eng., Aug. 27, 1856.

S. A. Simpson, Superintendent, Sleeping, Dining and Parlor Cars and News Service, Alberta Division, C.P.R., Calgary, born at Toronto, Aug. 22, 1880.

W. Stitt, General Passenger Agent, C.P.R., Eastern Lines, Montreal, born in Kirkcudbrightshire, Scotland, Aug. 3, 1855.

J. F. Sweeting, Industrial Agent, Natural Resources Department, C.P.R., Calgary, Alta., born at Worthing, Eng., Aug. 20, 1872.

W. F. Taylor, General Storekeeper, Intercolonial Ry., Moncton, N.B., born at Hillsboro, N.B., Aug. 20, 1855.

R. L. Thompson, ex-District Passenger Agent, C.P.R., Toronto, born at Montreal, Aug. 17, 1873.

Capt. F. J. Thomson, s.s. Royal George, Canadian Northern Steamships, Ltd., born in Cheshire, Eng., Aug. 20, 1876.

F. E. Warren, Division Car Foreman, Ontario Division, C.P.R., West Toronto, Ont., born at Chelsea, Que., Aug. 29, 1872.

W. B. Way, Superintendent District 1, Eastern Division, C.P.R., Farnham, Que., born at Bowmanville, Ont., Aug. 22, 1867.

E. H. Williams, Locomotive Foreman, Canadian Northern Ry., Brandon, Man., born at West Toronto, Ont., Aug. 26, 1844.

Railway Route Maps Approved.

The Minister of Railways approved the following railway route maps, July 2:—

Canadian Northern Ry., revision of Regina-Red Deer line from Tp. 26, r. 23, w. 3 m., to Alsask, 42.92 miles.

Canadian Pacific Ry., from Snowflake westerly, 9.1 miles; and Lake Winnipeg extension of West Selkirk Branch, from Gimli north, 26 miles.

Grand Trunk Pacific Ry., Prince Rupert westerly from mileage 2.25 to 3.23.

Moncton and Northumberland Strait Ry., from Richibucto to Loggieville, about 40 miles.

Canadian Irrigation Association at Lethbridge, Alta.—The seventh annual meeting of this association will be held at Lethbridge, Alta., Aug. 5, 6 and 7. The pioneer irrigation system on a large scale in Western Canada was started in 1900 in connection with what afterwards became the Alberta Ry. and Irrigation Co., now owned by the C.P.R. This was known as the Lethbridge system; it operates 250 miles of canals and ditches. J. S. Dennis, Calgary, Assistant to the President, C.P.R., is Vice President and Chairman of the executive committee of the association. Among those who will speak at the meetings will be L. O. Armstrong, Coloniation Agent, C.P.R., and J. G. Rutherford, Superintendent of Agriculture and Animal Industry, C.P.R.

Transportation Appointments Throughout Canada.

Allan Line Steamship Co.—G. E. BUNTING, heretofore Travelling Agent, Toronto, has been appointed General Western Freight Agent, Allan Line Steamship Co., and Manager, Allan and Co., General Agents, Passenger Department, same line, at Chicago, Ill., vice E. Francis, retired. Office, 127 North Dearborn St.

Canadian Government Railways.—C. A. HAYES, heretofore Freight Traffic Manager, G. T. R., Montreal, has been appointed General Traffic Manager, Canadian Government Railways, vice E. Tiffin, assigned to other duties in Toronto. Office, Moncton, N. B.

S. L. SHANNON, heretofore Comptroller and Treasurer, Intercolonial Ry., has been appointed Comptroller and Treasurer, Canadian Government Railways. Office, Moncton, N. B.

C. B. BROWN, A.M. Can. Soc. C.E., heretofore Principal Assistant Engineer, Eastern Lines, C. P. R., Montreal, has been appointed Chief Engineer, Intercolonial Ry., and Prince Edward Island Ry., as reported in our last issue. Office, Moncton, N. B.

Canadian Northern Ry.—F. J. CREIGHTON has been appointed Travelling Passenger Agent, Winnipeg, vice A. I. Daniels, transferred.

A. I. DANIELS, heretofore Travelling Passenger Agent at Winnipeg, has been appointed City Ticket Agent at Regina, Sask.

J. W. EATON, heretofore Assistant Station Master at Winnipeg, has been appointed Station Master at Edmonton, Alta.

D. G. MADILL has been appointed station ticket agent at Edmonton, Alta.

Canadian Pacific Ry.—A. PRICE, heretofore General Superintendent, Alberta Division, Calgary, has been appointed Assistant General Manager, Eastern Lines. Office, Montreal. This is a new position.

A. A. GOODCHILD, heretofore Auditor of Stores and Mechanical Accounts, has been appointed General Storekeeper, Lines East of Fort William, Ont., vice M. J. Power, deceased. Office, Montreal.

J. W. ORROCK, heretofore Division Engineer, North Bay, Ont., has been appointed Principal Assistant Engineer, Eastern Lines, reporting to the Assistant Chief Engineer, vice C. B. Brown, resigned to enter Canadian Government Railways service. Office, Montreal.

M. A. FULLINGTON, heretofore Assistant Division Engineer, Eastern Division, Montreal, has been appointed Assistant Engineer, Eastern Lines, Montreal.

F. M. RUTTER, heretofore Resident Engineer, Toronto, has been appointed Assistant Division Engineer, Eastern Division, Montreal, vice M. A. Fullington, promoted.

B. S. JENKINS, heretofore General Superintendent of Telegraphs, Western Lines, Winnipeg, will it is reported, be appointed to a new position in the Telegraph Department, at Montreal.

L. O. ARMSTRONG, Colonization Agent, Department of Natural Resources, Montreal, has been appointed to give lectures throughout Canada and the U. S. on the opportunities existing in the Dominion. The lectures will be illustrated by cinematograph views of actual scenes in the Western Provinces, and of the development of the Dominion's natural resources in both Eastern and Western Provinces.

D. M. EWART, heretofore assistant to Resident Engineer, Ottawa, has been appointed Resident Engineer, Toronto, vice F. M. Rutter, promoted.

F. J. BLAINE, heretofore rate clerk, Assistant Passenger Traffic Manager's office, Winnipeg, has been appointed District Passenger Agent, Fort William-Port Arthur District. Office, Fort William, Ont. This is a new position.

W. BLENNERHASSETT, heretofore locomotive driver, Fort William, Ont., has been appointed acting District Master Mechanic, District 1, Manitoba Division, vice W. W. Webster, transferred. Office, Kenora, Ont.

JOHN McMILLAN, heretofore Superintendent of Telegraphs, Manitoba Division, Winnipeg, has been appointed General Superintendent of Telegraphs, Western Lines, vice B. S. Jenkins, assigned to other duties. Office, Winnipeg.

C. MURPHY, heretofore General Superintendent of Transportation, Eastern Lines, Montreal, has been appointed General Superintendent, Manitoba Division, vice D. C. Coleman, transferred. Office, Winnipeg. The position of General Superintendent of Transportation, Eastern Lines, has been abolished.

C. Murphy,
General Superintendent, Manitoba Division, Canadian Pacific Railway

A. C. SHAW, heretofore Assistant General Passenger Agent, Western Lines, Winnipeg, has been appointed General Passenger Agent, Western Lines, vice C. B. Foster, promoted. Office, Winnipeg.

R. G. McNEILLIE, heretofore District Passenger Agent, Calgary, Alta., has been appointed Assistant General Passenger Agent, Western Lines, vice A. C. Shaw, promoted. Office, Winnipeg.

F. STEPHENS has been appointed acting General Claims Agent, Western Lines, during the absence of W. H. D'Arcy in Europe. Office, Winnipeg.

T. G. ARMSTRONG, heretofore General Foreman, Winnipeg, has been appointed Assistant Master Car Builder, Western Lines, vice G. H. Eaton, deceased. Office, Winnipeg.

E. M. PAYNE, heretofore Inspector of Telegraphs, Manitoba Division, has been appointed Superintendent of Telegraphs, Manitoba Division, vice J. McMillan, promoted.

D. ENGLAND, heretofore General Yardmaster, Winnipeg, has been appointed acting Trainmaster, there, vice P. F. Weisbrod, transferred, temporarily.

R. A. GAMBLE, heretofore Assistant General Yardmaster, has been appointed General Yardmaster, at Winnipeg, vice D. England, promoted.

J. G. STONE has been appointed Assistant General Yardmaster at Winnipeg, vice R. A. Gamble, promoted.

J. W. DAWSON, heretofore chief clerk to District Passenger Agent, Calgary, Alta., has been appointed chief clerk, Passenger Department, Winnipeg, vice R. Dawson, promoted.

M. J. SCOTT, heretofore District Master Mechanic, District 1, British Columbia Division, Revelstoke, has been appointed Master Mechanic, Saskatchewan Division, vice D. T. Main, transferred. Office, Moose Jaw.

D. C. COLEMAN, heretofore General Superintendent Manitoba Division, Winnipeg, has been appointed General Superintendent, Alberta Division, vice A. Price, promoted. Office, Calgary.

J. G. RUTHERFORD, C. M. G., heretofore Superintendent of Animal Husbandry, has been appointed Superintendent of Agriculture and Animal Industry, Department of Natural Resources. Office, Calgary, Alta.

W. J. ELLIOTT, heretofore Superintendent of Agriculture, Department of Natural Resources, Calgary, Alta., having been appointed Principal of the Agricultural College of Olds, Alta., the duties have been merged with those of Animal Husbandry, as mentioned in the previous paragraph.

P. F. WEISBROD, heretofore Trainmaster, Winnipeg, has been appointed acting Superintendent, Calgary Terminals, Alberta Division, vice C. S. Maharg, on leave of absence.

R. DAWSON, heretofore chief clerk, Passenger Department, Winnipeg, has been appointed District Passenger Agent, Calgary, Alta., vice R. G. McNeillie, promoted.

J. J. ANDERSON, heretofore Travelling Passenger Agent, Toronto, has been appointed District Baggage Agent, Alberta Division, vice W. E. Allinson, transferred. Office, Calgary.

C. H. BOWES, heretofore chief clerk to General Passenger Agent, Vancouver, B. C., has been appointed Assistant General Passenger Agent, Lines West of Revelstoke, B. C. Office, Vancouver, B. C. This is a new position.

D. T. MAIN, heretofore Master Mechanic, Saskatchewan Division, Moose Jaw, has been appointed Master Mechanic, British Columbia Division, vice S. Phipps, retired. Office, Vancouver.

Central Vermont Ry. — JOHN McCRAW, heretofore acting Superintendent, Southern Division, has been appointed Superintendent, and the position of acting Superintendent has been abolished. Office, New London, Conn.

W. BIBBY, heretofore Roadmaster, Grand Trunk Ry., Allandale, Ont., has been appointed Assistant General Roadmaster, C. V. R. Office, St. Albans, Vt.

Delaware and Hudson Co.—JAMES FITZSIMONS, heretofore General Eastern Freight Agent, Albany, N. Y., has been appointed General Canadian Freight and Passenger Agent. Office, Montreal.

Grand Trunk Pacific Coast Steamship Co.—See Grand Trunk Pacific Ry.

Grand Trunk Pacific Ry.—A. E. ROSEVEAR, heretofore Assistant to the Vice President, G. T. R. and G. T. P. R. (Traffic), Montreal, has been appointed General Freight Agent, G. T. P. R. and G. T. P. Coast Steamship Co., with territory Port Arthur, Ont., and west, vice C. E. Dewey, promoted to G. T. R. service. Office, Winnipeg.

F. R. PORTER, heretofore Division Freight Agent, Edmonton, Alta., has been appointed Assistant General Freight Agent, vice R. J. Foreman, transferred to G.T.R. service. Office, Winnipeg.

F. G. ADAMS, heretofore Commercial Agent, Regina, Sask., has been appointed Division Freight Agent, Edmonton, Alta., vice F. R. Porter, promoted.

ALBERT DAVIDSON has been appointed General Agent in charge of Passenger and Freight Traffic in Western British Columbia, north of Rivers Inlet, including Queen Charlotte Islands, G.T.P.R. and G.T.P. Coast Steamship Co., vice A. E. McMaster, promoted. Office, Prince Rupert.

A. E. McMASTER, heretofore General Agent, Prince Rupert, B.C., has been appointed Commercial Agent, Regina, Sask., vice F. G. Adams, promoted.

The following agents have been appointed,—Elie, Man., A. Fullum; Ingelow, Man., J. A. Babin; Quinton, Sask., P. D. Hamilton; South Saskatoon, Sask., H. A. Murphy; Landis, Sask., G. H. LeGallais; Dandurand, Alta., E. B. Elgood; Tete Jaune, B. C., J. L. Strong; Battleford, Sask., J. P. Gillis.

Grand Trunk Ry.—C. E. DEWEY, heretofore General Freight Agent, G. T. P. R. and G. T. P. Steamship Co., Winnipeg, has been appointed Freight Traffic Manager, G. T. R., vice C. A. Hayes, resigned to enter other service. Office Montreal.

R. J. FOREMAN, heretofore Assistant General Freight Agent, G. T. Pacific Ry., Winnipeg, has been appointed Assistant to the Vice President (Traffic), G. T. R. and G. T. P. R., vice A. E. Rosevear, transferred to G. T. P. R. service. Office, Montreal.

W. C. CHISHOLM, K.C., formerly City Solicitor for Toronto, has been appointed General Solicitor, G.T.R. Office, Montreal.

A. E. BECKETT, Solicitor, will, as heretofore, take charge of such matters arising in the Province of Quebec, as may be assigned to him.

W. E. FOSTER, heretofore Assistant Solicitor, Montreal, has been appointed Solicitor, and will take charge of such matters arising in the Province of Ontario, as may be assigned to him.

J. H. FARRAR, heretofore chief clerk to Storekeeper, Montreal, has been appointed Storekeeper, there, vice H. Clarke, retired under the pension rules.

C. J. O'DOHERTY, heretofore chief clerk to Storekeeper, Ottawa, has been appointed Storekeeper, there, vice E. J. McVeigh, promoted.

A. C. O'NEIL, heretofore chief clerk to General Agent, Sarnia, Ont., has been appointed Travelling Freight Agent, London, Ont.

The following agents have been appointed,—Noyan Jct., Que., P. W. Marier; Beaverton, Ont., J. G. Holman; Goodwood, Ont., W. T. Byam; Sutton, Ont., R. G. Winters; Trout Creek, Ont., I. B. Musselman; Terra Cotta, and Cheltenham, Ont., F. J. Jones; Tottenham, Ont., H. J. Quinlan; Glen Huron and Nottawa, Ont., F. C. Prosser; Thamesville, Ont., J. W. Miller; Walkerville and Windsor, Ont., A. R. Huston; Bridgeburg, Fort Erie, Ont., and Black Rock, N. Y., S. V. Beck; Dunnville, Ont., S. Young; Norwich, Ont., F. W. Lee; Milverton, Ont., J. C. Cunningham; Dalkeith, Ont., R. J. Hardy; Admaston, Ont., E. J. Pepper; Eganville, Ont., J. P. Smith; Kallaloe, Ont., H. W. Lora; Brighton, Ont., (outside), A. Mark.

Intercolonial Ry.—DONALD McDONALD, heretofore Superintendent, Montreal and Ste. Flavie District, Levis, Que., is reported to have been appointed District Passenger Agent at Montreal.

R. COLCLOUGH, heretofore Assistant Superintendent, Moncton, N. B., has been appointed Superintendent, Montreal and Ste. Flavie District, vice D. McDonald, transferred. Office, Levis, Que.

Napierville Jct. Ry.—See Quebec, Montreal and Southern Ry.

Prince Edward Island Ry.—See Canadian Government Railways.

Quebec, Montreal and Southern Ry.—JAMES FITZSIMONS, heretofore General Eastern Freight Agent, Delaware and Hudson Co., Albany, N. Y., has been appointed General Manager, Q. M. & S. R. and Napierville Jct. Ry. Office, Montreal.

D. T. Main,
Master Mechanic, British Columbia Division, Canadian Pacific Railway.

Southern New England Ry.—H. C. ESTEP, Engineer of Construction, having resigned to enter another company's service, the position has been abolished.

H. A. PHELPS has been appointed Division Engineer, vice T. I. Ellis, resigned. Office, Providence, R.I.

The Board of Railway Commissioners has passed an order requiring the Quebec Oriental Ry. to add to its equipment by Dec. 31, two new locomotives capable of carrying at least 160 lbs. steam pressure to the square inch, and also if, after hydrostatic tests, the boilers of its present locomotives be found incapable of carrying similar steam pressure, it shall purchase at least four additional boilers for its 17 by 24 in. class of locomotives, capable of carrying such pressure.

Canadian Northern Railway Earnings, Etc.

Gross earnings, working expenses, net earnings, increases, or decreases, compared with those for 1911-12, from July 1, 1912:—

	Gross Earnings	Expenses	Net Earnings	Increase
July	$1,829,700	$1,335,100	$494,600	$133,000
Aug.	1,745,800	1,375,000	270,800	56,100
Sept.	1,671,500	1,248,000	423,500	4,100
Oct.	2,351,200	1,645,900	705,300	24,800
Nov.	2,509,700	1,631,900	877,800	212,600
Dec.	2,132,000	1,551,000	581,000	77,200
Jan.	1,513,400	1,243,200	270,200	46,500
Feb.	1,398,700	1,130,200	268,500	30,900
Mar.	1,685,900	1,254,400	431,500	4,700
Apr.	1,745,300	1,242,200	503,100	100,000
May	2,218,400	1,638,200	580,200	122,100
	$20,801,600	$15,295,100	$5,506,500	$812,100
Incr	$5,032,700	$2,220,400	$812,100	. . .

Average mileage operated during 1913, 4,297, against 3,851 in the previous year.

Approximate earnings for June, $2,178,200, against $1,709,500 for June, 1912.

Canadian Pacific Railway Earnings, Etc.

Gross earnings, working expenses, net earnings, increases or decreases, compared with those for 1911-12, from July 1, 1912:—

	Gross Earnings	Expenses	Net Earnings	Increase or Decrease
July	$12,052,398.58	$7,604,221.68	$4,448,176.90	$745,148.5
Aug.	12,251,715.87	7,533,790.21	4,717,925.66	642,354.65
Sept.	11,579,733.98	7,329,430.13	4,250,303.85	332,857.05
Oct.	13,060,397.80	7,999,510.61	5,060,887.19	379,782.44
Nov.	12,362,666.42	8,104,527.38	4,258,139.04	270,772.52
Dec.	12,213,278.72	7,823,559.21	4,389,719.51	289,989.22
Jan.	9,679,607.39	8,017,233.61	1,662,373.78	579,516.05
Feb.	9,747,685.55	7,227,616.21	2,520,069.34	136,202.67
Mar.	11,111,892.78	7,256,475.89	3,855,416.89	137,015.78
Apr.	11,750,913.45	7,805,835.90	3,945,077.55	x170,674.24
May	11,904,979.02	8,400,949.16	3,504,029.86	176,485.37
	$127,721,269.56	$85,103,149.99	$42,618,119.57	$3,166,479.43
Incr	$15,713,125.53	$12,546,646.10	$3,166,479.43	

x Decrease.

Approximate earnings for June, $11,187,000, against $10,848,000 for June, 1912.

Commencing with July 1, the mileage under operation was increased to 11,565.

Grand Trunk Railway Earnings, Etc.

The following figures show the earnings and expenses of the G.T.R., C.A.R., G.T. Western Ry. and D.G.H. & M.R. for May, as compared with those for same period in 1912:—

Grand Trunk Railway.

	1913.	1912.
Earnings	$3,867,600	$3,366,300
Expenses	2,668,400	2,359,300
Net earnings	$1,199,200	$1,007,000

Canada Atlantic Railway.

	1913.	1912.
Earnings	$212,600	$202,100
Expenses	222,000	204,400
Deficit	$9,400	$2,300

Grand Trunk Western Railway.

	1913.	1912.
Earnings	$635,900	$557,400
Expenses	598,000	441,300
Net earnings	$37,900	$116,100

Detroit, Grand Haven and Milwaukee Ry.

	1913.	1912.
Earnings	$197,900	$177,500
Expenses	247,450	173,600
Net earnings	x$49,550	$3,900

x Deficit.

Approximate earnings for June, $5,048,541, against $4,453,475 for June, 1912.

The mileage in operation during the year, was 4,533, the same as the previous year.

TRAFFIC RECEIPTS OF THE SYSTEM.

Aggregate from Jan. 1 to June 30:—

	1913	1912	Increase
G.T.R.	$21,218,906	$18,605,299	$2,613,607
C.A.R.	1,151,877	1,046,130	105,747
G.T.W.R.	3,642,809	3,202,444	440,365
D.G.H. & M.R.	1,143,189	1,017,879	125,310
Totals	$27,156,781	$23,871,752	$3,285,029

Grand Trunk Pacific Railway Earnings.

The earnings of the Prairie Section and Lake Superior Branch for June, were $504,065, and the aggregate earnings for six months ended June 30, were $2,659,678.

The Victoria and Sidney Ry., a subsidiary of the Great Northern Ry. (U.S.), is reported to have acquired a gas electric car, for operation between Victoria and Sidney, B.C.

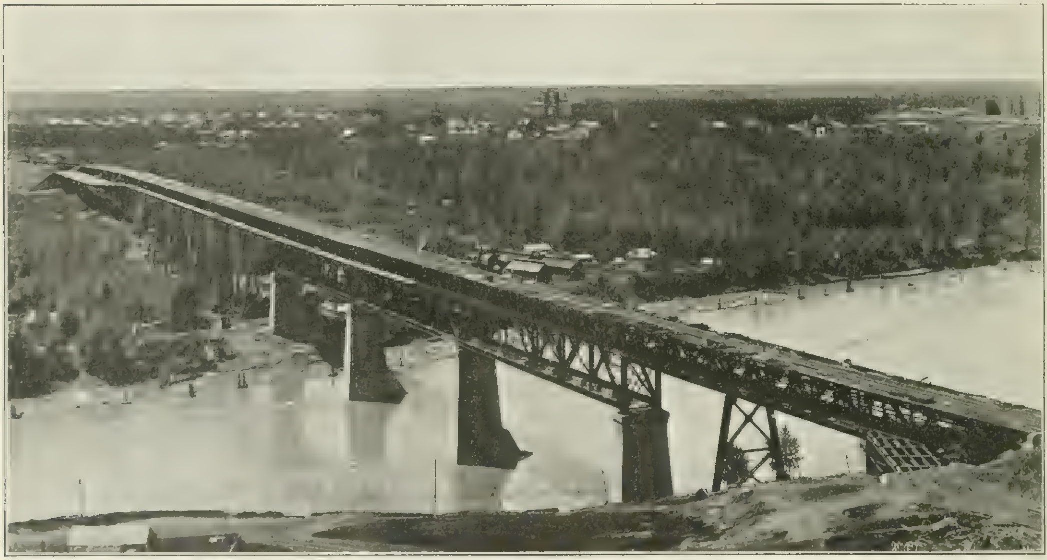
The Canadian Pacific Railway High Level Bridge at Edmonton.

The accompanying illustration shows the bridge recently completed by the C.P.R. over the North Saskatchewan River between Edmonton and South Edmonton, Alta. It is a steel span structure 2,500 ft. long from face to face of ballast walls of the end abutments. This distance is made up of three 288 ft. centre spans across the river, 10 tower spans each from 30 to 50 ft. long, and 14 open spans each from 30 to 100 ft. long. The main spans over the river are supported on concrete piers which measure approximately 115 ft. from the base of rail to the footing, the latter in one instance extending to a depth of approximately 40 ft. below the river surface. The approach trestles on each bank are carried on concrete pedestals built up on concrete piling.

The bridge is to carry steam and electric railway and vehicular traffic. The railway deck on the top of the structure carries three tracks, one for C.P.R. trains and the other two for electric railway service. The roadway deck is located 20 ft. below the railway tracks, and consists of a reinforced concrete roadway 23 ft. wide, paved with wood, in addition to which there are two side paths 8 ft. wide supported on cantilever brackets.

The highways and electric line approach the bridge from Saskatchewan Ave., on the Edmonton side, and from Anthony St. on the South Edmonton side. The C.P.R. tracks on the Edmonton side are carried across Victoria and MacKay Aves. on reinforced concrete structures, and across Saskatchewan and Jasper Aves. on steel structures. On the South Edmonton side Anthony St. is carried over the railway tracks on a reinforced concrete bridge.

The Dominion Parliament voted the C.P.R. as lessees of the Calgary and Edmonton Ry., a subsidy of 15% of the cost of the bridge.



Canadian Pacific Railway High Level Bridge at Edmonton Alta.

Buildings on the Campbellford, Lake Ontario and Western Railway.

The contract for the erection of all the buildings on this new line from Glen Tay to Agincourt, Ont., which is being built for the C.P.R., has been let to the John S. Metcalf Co., Ltd., Montreal, as stated in our last issue. It is intended to have all the buildings completed and the line opened for traffic this year.

The buildings to be erected at Trenton, the divisional point, include, station class A, 23 by 89 ft.; standard no. 1 freight shed, 40 by 128 ft.; standard no. 1 enclosed tank of 40,000 gals. capacity; standard no. 2 single tool house, 10 by 14 ft.; 80 ft. turntable; standard no. 4 store and oil house, 30 by 30 ft.; 12 stall locomotive house; machine and boiler house; two track coaling plant, 32 by 50 ft.; two track sand house, 44 by 12 ft.; two track ash pit, 35 by 39 ft.; ice house, 30 by 300 ft.; and 10 in. stand pipe. Standard station A plan is similar to the new station at West Toronto, built of brick on concrete foundations, with slate roof and interior finish of natural wood.

The passenger stations at Cobourg and Oshawa will be of the standard plan B, similar to the new station at Orillia, Ont., 28 by 109 ft., of brick on concrete foundations; with slate roofs, and finished on the inside with natural wood. Those at Brighton, Port Hope, Bowmanville and Whitby will be of the standard plan C, similar to the station at Listowel, Ont., 20 by 77 ft. 6 in., of brick on concrete foundations, with slate roof, and interior finish of natural wood.

Standard no. 2 stations will be built at Colborne, Newtonville and Newcastle. These are of wood on concrete foundations, 24 by 91 ft. Standard no. 5 stations will be built at Glen Tay, Christie Lake, Crow Lake, Wilkinson, Roblin, Lonsdale, Shannonville, Grafton and Cherrywood. These are of wood on concrete foundations, and vary in dimensions from 21½ by 67 ft., to 21½ by 77 ft. The station at Parham will be of a special plan.

Standard no. 1 enclosed water tanks will be built at Crow Lake, Wilkinson, Roblin, Colborne, Cobourg, Newtonville, Bowmanville, Agincourt, and Whitby.

Standard no. 1 freight sheds, 40 by 128 ft., will be built of wood on concrete foundations at Belleville, Brighton, Cobourg, Port Hope, Bowmanville, Oshawa and Whitby.

The other buildings consist of single and double tool houses, and other structures.

Eastern Railway Companies Cancel Cartage Tariffs.

The railway companies operating east of Port Arthur have announced that they have decided to cancel all cartage agreements under which they have heretofore delivered freight at consignees' warehouses, and that on and after Oct. 1 shippers and consignees must make their own arrangements for the cartage of their freight.

Under the present arrangements the railway companies have agreements with certain cartage companies, under which the freight is carted at a fixed schedule of rates, and the railways charge a general rate of 50c a ton, with a minimum of 15c for small or single shipments. The railway companies claim that they have been paying out more for cartage than they have been collecting, and there have also been numerous complaints that the system discriminated in favor of large places against smaller ones which have no cartage system. It is stated that an application will probably be made to the Board of Railway Commissioners in the matter, so that the views of the shippers may be stated as to the effect of the change on general business conditions. Over 20 places, including the principal cities and terminal points, will be affected.

Canadian Railway
AND
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Established 1898

Devoted to Steam and Electric Railway, Marine, Express, Telegraph, and Railway and Canal Contractors' Interests.
Official Organ of the various Canadian Transportation Associations.

ACTON BURROWS, LIMITED - Proprietors.
70 Bond Street, Toronto, Canada.

ACTON BURROWS, A.Can.Soc.C.E.
Managing Director and Editor-in-Chief.
AUBREY ACTON BURROWS - Secretary and Business Manager.

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Mechanical Editor - FREDERICK H. MOODY, B.A.Sc.

SUBSCRIPTION PRICES, INCLUDING POSTAGE:

TORONTO AND WEST TORONTO POSTAL DELIVERY, $1.25 a year.

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NOTICE TO ADVERTISERS.

ADVERTISING RATES furnished on application.

ADVERTISING COPY must reach the publishers by the 10th of the month preceding the date of publication.

TORONTO, CANADA, AUGUST, 1913.

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National Transcontinental Railway Construction.

D. MacPherson, Assistant to Chairman, N.T.R. Commission, is reported to have stated on his return from a recent trip of inspection over the line that the only remaining gap where rails are not laid is one of 53 miles between Cochrane, Ont., and Heaney Jct., Que., and that this will be done by the fall. There is no reason, he added, why the whole line could not be ready for operation by the fall of 1914.

R. W. Leonard, Chairman of the Commission, arrived in Cochrane, Ont., July 9, where he met M. Donaldson, Vice President, Grand Trunk Pacific Ry., and started on a trip of inspection over the line west to Winnipeg. The work of finishing up the line between Cochrane and Superior Jct. has been in progress for some time, and it was expected that as the result of this inspection a regular passenger service would be arranged.

Tenders are under consideration for the construction of a car ferry slip at Levis, Que., and for dredging for the same.

The proposed contract between the Commission and the city of Quebec for the construction of workshops at St. Malo, was submitted to the City Council July 11. (July, pg. 336.)

Grand Trunk Pacific Railway Construction.

Work on the main line is reported to be progressing satisfactorily. Track has been laid to 1,137 miles west of Winnipeg, or about 380 miles from Trout Creek, B.C., to which point the track laying gang has worked eastward from Prince Rupert. An additional track laying equipment has been sent to work westwards. Work has been started by the Bates-Rogers Construction Co., Chicago, Ill., on the bridge across the Fraser River at Fort George. Application is being made to the Minister of Railways for the approval of route plan for an extension of the line at Prince Rupert round the north shore of Kaien Island and along the Shawlawan passage, 3.5 miles.

G. T. P. Branch Lines.—The Board of Railway Commissioners has authorized the opening for traffic of the Biggar-Calgary branch, from Biggar to Dodsland, Alta., 48 miles, at a speed of 20 miles an hour, rescinding the order of Oct. 24, 1911. Track laying has been completed on this branch to mileage 63, and grading has been completed to the Saskatchewan-Alberta boundary, mileage 105.

It is expected to lay steel during this year on the Young-Prince Albert branch, from Wakaw, the present track end, to Prince Albert; and to lay some track on the Cutknife branch.

Tracklaying has been completed on the Tofield-Calgary branch, and it is expected to have the line ballasted and ready for operation right through by Sept. 1. (July, pg. 336.)

Railway Rolling Stock Notes.

The Canadian Northern Ry. has ordered five electric lighted first class cars, from Canadian Car and Foundry Co.

The Intercolonial Ry. has ordered 20 box baggage cars and 10 vans from its Moncton shops, and has received 8 vans from its Moncton shops, 1 Hart convertible car, built by the Canadian Car and Foundry Co., from the Hart-Otis Car Co., and 1 freight locomotive from Canadian Allis-Chalmers, Ltd.

It is anticipated that delivery of the 2,000 steel underframe box cars which the G.T.R. recently ordered from the Eastern Car Co., will be commenced during August.

The Timiskaming and Northern Ontario Ry. has ordered two complete steel passenger trains, to be built by the Pullman Co., Chicago, Ill., for delivery next year.

The Canadian Car and Foundry Co. has received orders from the Canadian Northern Ry. for five first class passenger cars, and from F. H. Hopkins and Co. for one 30 ton Lidgerwood car.

The Kettle Valley Ry. has ordered one Rodger double plough distributing car, from Hart-Otis Car Co. Following are the chief dimensions:—

Capacity	[illegible]
Length over end sills	[illegible]
Width over side sills	[illegible]
Height from rail to floor	[illegible]
Truck centres	[illegible]
Wheel base of truck	[illegible]

The Grand Trunk Pacific Ry. has received 10 colonist cars, nos. 3043 to 3052; 2 pay cars, nos. 4106 and 4107; one mail car, no. 110; 7 mail and express cars, nos. 117 to 123, and 5 sleeping cars, from Canadian Car and Foundry Co. The sleeping cars are named, Canterbury, Calcutta, Cardiff, Cape Colony and Cambridge.

The Canadian Northern Ry., between June 14 and July 15, received the following additions to rolling stock:—200 box cars, from Canadian Car and Foundry Co.; 200 flat cars, from Crossen Car Co.; 50 Hart cars, from Hart-Otis Car Co.; 40 refrigerator cars, from Mount Vernon Car Co.; 180 box cars, from Nova Scotia Car Works; 5 consolidation locomotives, from Canadian Locomotive Co.; and 2 consolidation locomotives, from Canadian Allis-Chalmers, Ltd.

The Algoma Steel Corporation has ordered 19 special Otis type all steel general service cars, from the Hart-Otis Car Co. These cars will be built by the Canadian Car and Foundry Co., and will be specially and heavily constructed to take care of the hard service for which they are intended. Following are the principal dimensions:—

Capacity	100,000 lbs.
Length over end sills	38 ft. 9 ins
Length inside	36 ft. 9½ ins
Width overall	9 ft. 11¼ ins
Width inside	9 ft. 6 ins
Height	5 ft.
Height from rail	9 ft. 4-13/16 ins.
No. of doors on each side	6

Pacific Coast Claims Agents.—The annual meeting of this association, representative of the claims agents of the steam and electric railways operating on the Pacific Coast, was held at Vancouver, B.C., July 10 to 12. The British Columbia Electric Ry. Co. entertained the members of the association and their wives in various ways during the visit, terminating at a banquet at which A. E. Beck, the company's Claims Director, presided. The officers were elected:—President, J. H. Handlon, San Francisco, Cal.; First Vice President, T. J. Aston, Spokane, Wash.; Second Vice President, A. M. Lee, Seattle, Wash.; Third Vice President, G. N. Smith, Portland, Ore.; Secretary-Treasurer, E. H. Odell. The nominating committee placed the name of Mr. Beck, of the B.C.E.R. Co., before the convention, but he declined on the ground of not being in the centre of business for the Pacific Coast.

Extensions and Alterations at C. P. R. Winnipeg Station and Hotel.

The accompanying illustration shows the C.P.R. station and Royal Alexandra Hotel at Winnipeg as they will be when the alterations and extensions now being made are completed. These alterations and extensions will largely change the appearance of the existing buildings. The improvements being made will be an addition to the hotel which will add 184 room, not 474 as stated in daily press reports, to its accommodation; a new six story building will replace the present baggage room and Dominion Express Co.'s offices; there will be considerable extensions to the present station and waiting rooms, and in the train shed the tracks will be raised six feet, and the Main St. subway is to be raised to a corresponding height and widened to permit of the installation of two additional tracks.

The internal improvements to the hotel will give two additional elevators for baggage; and additional elevators for guests; the addition of a ball room 100 by 40 ft.; a banquet room of similar dimensions, and 10 private dining rooms.

The station accommodation will be rearranged so as to provide special waiting rooms for immigrants; a complete rearrangement of the space allotted for the handling and checking of baggage, and the construction of a subway with connecting stairways between the hotel and the station.

Canadian Pacific Railway Station and Royal Alexandra Hotel, Winnipeg, as They Will Appear When Extensions Contracted for Are Completed.

The work is being carried out by Westinghouse, Church, Kerr and Co., whose local representative is E. J. Brinkherhoff. F. Lee, Principal Assistant Engineer, is in charge for the C.P.R.

The New Brunswick Public Utilities Commission Act.

The powers of the Public Utilities Board appointed in 1910, have been extended by the New Brunswick Legislature. The new sections of the act are 23 to 27 inclusive, and provide as follows:—

(23) Authorizing the Board to make orders for the joining of the tracks of two or more railways chartered by the New Brunswick Legislature and entering any municipality where necessary for the proper interchange of traffic, and providing penalties for neglecting to obey the order.

(24) Granting similar power in case of the intersection of a line chartered by the New Brunswick Legislature with a line chartered by the Dominion Parliament.

(25) Authorizing the Board to act in conjunction with the Board of Railway Commissioners in applications under Dec. 24.

(26) Declaring that the word "railway" in the preceding sections shall include "any steam or electric railway, street railway or tramway."

(27) Provides that "upon the application of not less than 50 owners of real estate in any district in which a street railway is being operated, or of an adjoining district asking for an order of the Board for the extension of the said railway," the Board may, after an inquiry, make such order as the public interests may require.

(28) For refusing or neglecting to obey such order a penalty of $25 a day is provided, which may be enforced under the terms of sec. 6, chap. 55, 1 Geo. V.

Intercolonial Railway Betterments and Extensions.

Following the return to Ottawa of the Minister of Railways from his recent trip of inspection over the Intercolonial Ry., press reports stated that important plans for the improvement of the line had been decided on. These were said to involve the building of a second track from Moncton, N.B., to Halifax, N.S., where new deep water terminals are to be built, and the improvement of the entire line in respect of gradients and curvature. We have been officially advised that these reports are merely newspaper talk.

In a recent interview F. P. Gutelius, General Manager, said the aim of the present management was to creat a 0.6% gradient on the line right through to Halifax and Sydney, and that the change to this gradient would be effected at the rate of about 100 miles of line a year. Following up this report we are officially advised that surveys are now being made for grade revision on the Cape Breton line, from Point Tupper to Sydney, 91 miles, and that the surveys have been so far completed that it appears that a gradient of 0.6% will be secured in both directions. It is also proposed to build a second track from Levis to Chaudiere Jct., Que., nine miles, and a diversion from Derby Jct., to Nelson, N.B., which will shorten the line into Fredericton by about three miles.

We are officially advised that a contract has been let to the Cook Construction Co., of Sudbury, and Andrew Wheaton, of Amherst, N.S., for the building of a double track line from Rockingham to the new ocean terminals at Halifax, N.S. The estimated cost of this work is $1,500,000, and it is to be completed within two years. This piece of line will be about five miles long and will be known for bookkeeping purposes as the Halifax Terminal Ry. The construction will involve a good deal of excavation, the material from which will be used in filling on the work at the new deep water dock. A short description of the new terminals was given on pg. 264 of our June issue.

In connection with the new deep water terminal plans F. W. Cowie, who advised the Government on the matter, said that after consultation with various authorities it was decided that it was necessary to provide accommodation for nine ocean going vessels at once; for nine additional vessels in about three or four years, and for a further nine vessels after the opening of the Quebec bridge, with a corresponding increase in the railway accommodation at the same time. Having these requirements as a guide all possible locations were considered and it was finally decided to adopt George's Island Bay as the site for the new terminals. With an excellent approach through Fairview to the harbor site from a railway point of view, it was then necessary to lay out as most suitable, in consideration of the physical features of the location, the type and design of harbor development which has been decided upon. It was found that a union station could be located within half a mile of the centre of the city, with excellent streets leading from the station to all city points. It was found that by building a bulkhead wharf along the narrower waterfront 2,000 feet of bulkhead quay could be provided so as to give the very best possible harbor accommodation.

The most important construction work going on is the building of the line from Dartmouth to Upper Musquodoboit, 67 miles. The maximum gradient is generally 1%, but there is one stretch of 7,000 ft. where the gradient is 1.20%. With the exception of one curve of eight degrees, the maximum curvature is six degrees; all curves sharper than two degrees were spiralled before grading commenced. There are 36 steel structures, and one steel viaduct. The viaduct consists of one span of 70 ft. and two of 40 ft. each, while the dimensions of the bridges are as follows:—Two of 125 ft. each, one of 115 ft., one of 75 ft., three of 60 ft. each, three of 40 ft. each, one of 30 ft., one of 20 ft., and 24 of 17 ft. each. We are officially advised that 75% of the grading and 50% of the masonry has been completed and that 10 miles of track has been laid. It is expected to have 50 miles of track laid by the end of the year, and to have the line completed during 1914. The general contract was let to M. P. and J. T. Davis, Quebec, who sublet the entire work to Cavicchi and Pegano. W. A. Hendry, A.M. Can. Soc. C.E., is engineer in charge of construction. (July, pg. 334.)

A contract for the construction of the first unit of the Davidson and Smith elevator at Fort William, has been let to the Barnett and McQueen Co. for $358,000. It is stated that work will be started at once

Traffic Orders by the Board of Railway Commissioners.

The dates given for orders are those on which the hearings took place, and not those on which the orders were issued:—

Interswitching at Belleville, Ont.

19481. June 2. Re application of City of Belleville, Ont., and The Graham Co., Ltd., for an order directing the Grand Trunk and Canadian Northern Ontario Railway Companies to furnish interswitching facilities between their respective railways at Belleville. It is ordered that the tracks of the C.N.O.R. and G.T.R. Companies at Belleville be so connected as to provide for the reasonable receiving, forwarding, delivering, and interswitching of traffic between their respective railways; the C.N.O.R. Co. to file, within 15 days from date, plans showing proposed connection and interchange tracks, located on the south side of Wharf St., leading from the said Company's tracks to the Canada Steel Co.'s plant, and connecting with the G.T.R. tracks leading to the said plant near George St.; and that the work be proceeded with, and proper facilities afforded for the receiving, forwarding, delivering, and interswitching of traffic between the said railways, within 30 days after the approval of the plans by the Board, upon the city consenting to tracks being laid on Wharf St. The apportionment of cost of said work is reserved.

Terminal Charges at Kelowna, B.C.

19497. May 15. Re application of Kelowna Board of Trade for an order directing the C.P.R. to discontinue the charge of $1 made by it on all incoming and outgoing cars delivered from and taken to its car barges. It is ordered that the application be dismissed.

Extension of Cartage Limits at London.

19539. June 9. Re application of the City of London, Ont., for certain extensions to the area in the city within which the railway companies undertake the collection and delivery of freight at the tolls published in their special tariffs of cartage charges. It is ordered that the eastern limit of the area within which the railway companies undertake the cartage of freight in London, at the toll therefor published and filed, be extended to, and including, Ashland Ave.; and that the southern limit of the area be extended so as to include Adelaide St. south of the River Thames to Terrace St. and Terrace St. westwardly, to, and including, the factory of the Richards-Wilcox Canadian Co.; the said eastern extension to be made within 10 days from the issuance of this order, and the said southern extension immediately upon the completion of a permanent pavement thereon.

Slats for Refrigerator Cars.

19570. June 13. Re order 18825, Mar. 5, 1913, made upon the application of the Fruit Growers' Association of Ontario, for an order directing railway companies, inter alia, to furnish refrigerator cars equipped with rack or slatted floors, so as to ensure free circulation of cold or warm air, and to reimburse the cost of such rack or slatted floors when they have to be furnished by the shippers themselves; and directing, with respect to that part of the application, that the Grand Trunk, Grand Trunk Pacific, Canadian Pacific, and Canadian Northern Railway Companies notify the Board, not later than April 15, 1913, what number of their, and each of their, refrigerator cars in service are supplied with slatted floors, and what number are not. Upon the information having been furnished in compliance with the order, and the reading of the report of the Chief Traffic Officer of the Board, it is ordered that where shippers furnish slats for the floors of refrigerator cars not equipped with permanent slatted or double floors, or for the floors of box cars tendered to and accepted by shippers in lieu of refrigerator cars, for the carriage of fresh fruits, railway companies of Canada shall allow the shipper $3 a car for the slatting; the shipper to be permitted to deduct the allowance from the freight charges payable by him upon the shipment in such car in which the slatting has been furnished; the shipper's receipt for the amount allowed to be given the railway company's agent at the forwarding station, and to be accepted by him as so much cash in the prepayment of the freight charges on such car.

Ore Rates in British Columbia.

19712. June 30. Re application of Hudson Bay Mining Company, Salmo,B.C., complaining of the rate on ore from Salmo to Nelson charged by Great Northern Railway, as compared with the rate charged by C.P.R. from Nelson to Trail; and that the G.N.R. insists on a shipping valuation of $100. It is ordered that G.N.R. put into force on shipments of ore, in carloads, from Salmo to Nelson, the following additional rates, viz., $1.10 a net ton when the valuation does not exceed $15 a ton, $1.15 a net ton when the valuation does not exceed $20 a ton. The said additional rates to be made effective within 30 days from date of this order.

Modification of Rules.

19710. June 27. Re order 18564, Jan. 25, 1913, directing that the effective date of the modification of rule 7 of G.T.R. Special Freight Tariff, C.R.C., no. E. 2374, I.C.C. no. 1660, contained in supplements 5 and 3 thereto, and the modification of rule 33 of the C.P.R. Local Freight Tariff, C.R.C. no. E. 2141, I.C.C. no. E. 1288, contained in supplements 9 and 6 thereto, be postponed pending a hearing of the matter at the sittings of the Board to be held in Toronto, Feb. 7, 1913. At the hearing at the said Toronto sittings, the effective date of the said modification was further postponed until July, 1, 1913, to enable the companies to furnish the Chief Traffic Officer of the Board with further material. And upon the recommendation of the Chief Traffic Officer it is ordered that the effective date of the modification of the rules be further postponed until Aug. 1, 1913.

Transportation of Explosives.

General order 105. May 22. Re general order 100, Jan. 16, 1913, approving regulations for the transportation of explosives by railway companies; and the application on behalf of the railway companies to amend the regulations to provide, under certain conditions, for the haulage of explosives in mixed trains. It is ordered that par. 1666 (1), and the unnumbered par. between pars. 1683 and 1684, pages 23 and 27, respectively, of the regulations, be amended to provide that railway companies, but only on such lines, or portions of lines, on which solid freight trains are not operated, be permitted to carry explosives, the carriage of which is not forbidden by the general order 100, and in accordance with the regulations therein contained, in quantities not exceeding 500 lbs. in any mixed train; the explosives to be contained in but one car, and said car to be so placed in the train that not less than 5 freight cars are between it and the passenger car or cars.

Readjustment of Lumber Tariffs.

In May the C.P.R. appealed to the Governor in Council against the Board of Railway Commissioners' order directing it, the Canadian Northern Ry. and the Grand Trunk Pacific Ry. to adjust lumber tariffs, the application for the order having been made by the Mountain Lumber Association. Since the appeal was lodged conferences have taken place between the parties interested, which have resulted in the Association withdrawing its complaint and the railway companies issuing tariffs which are satisfactory to the Board.

Among the Express Companies.

F. M. Smith, heretofore route agent, Canadian Ex. Co., Winnipeg, has been appointed agent there, vice F. Norman, promoted.

F. Norman, heretofore agent, Canadian Ex. Co., Winnipeg, has been appointed Superintendent, Northwestern Division, vice N. J. Ross, transferred to Montreal. Office, Winnipeg.

N. J. Ross, heretofore Superintendent, Northwestern Division, Canadian Ex. Co., Winnipeg, has been appointed Superintendent, Eastern Division, Montreal, vice P. A. Paterson, resigned.

N. J. Ross, who has been appointed Superintendent, Eastern Division, Canadian Ex. Co., Montreal, entered Canadian Ex. Co.'s service in 1885 at Orillia, Ont. He was appointed Superintendent at Montreal in 1907, and in 1908 was transferred to Winnipeg to establish the company's system over the Grand Trunk Pacific Ry.

The Board of Railway Commissioners has approved the Dominion Ex. Co.'s Schedules, B, C.R.C. 4345, to supersede C.R.C. 2583; C, C.R.C. 4346, to supersede C.R.C. 2584, and D, C.R.C. 4347, to supersede C.R.C. 2585, approved by order 14418, July 19, 1911; the Canadian Northern Ex. Co.'s schedule B, C.R.C. 791 to supersede C.R.C. 725, approved by order 14418, July 19, 1911; the Canadian Ex. Co.'s schedule B, C.R.C. 1514, to supersede C.R.C. 1364, and C, C.R.C. 1515, to supersede C.R.C. 1365, approved by order 14413, July 19, 1911, and the Great Northern Ex. Co.'s schedules A and B, C.R.C. 298, to supersede C.R.C. 270, approved by order 14417, July 19, 1911.

Railway Lands Patented. — Letters patent were issued during May, covering Dominion railway lands in Manitoba, Saskatchewan, Alberta and British Columbia, as follows:—

Alberta Central Ry.	[illegible]
Canadian Northern Alberta Ry.	[illegible]
Canadian Northern Ry.	81.73
[illegible] Ry.	[illegible]
Canadian Pacific Ry.	[illegible]
Grand Trunk Pacific Branch Lines Co.	67.26
Qu'Appelle, Long Lake and Saskatchewan Rd. and Steamboat Co.	28.83
Total	[illegible]

The Projected Round the World All Red Route.—A London cablegram of July 15, states that a contract has been signed for the building of a railway from Collooney to Black Sod Bay, County Mayo, Ireland, and for the construction of harbor works at that point. This is part of the project for an all British round the world route, and will be linked up with the Canadian railway system by a steamship service, which the promoters say will make the trip in three and a half days.

The Grand Trunk Ry. Co. has over 60,000 shareholders.

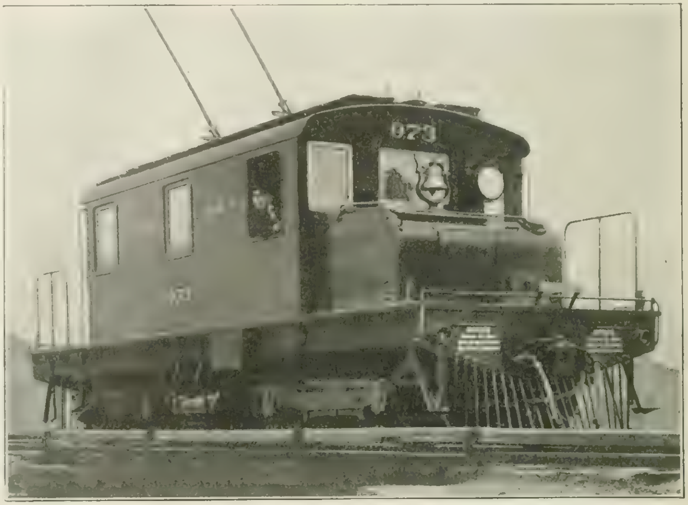
Electric Railway Department.

Electric Locomotives for British Columbia Electric Railway Freight Service.

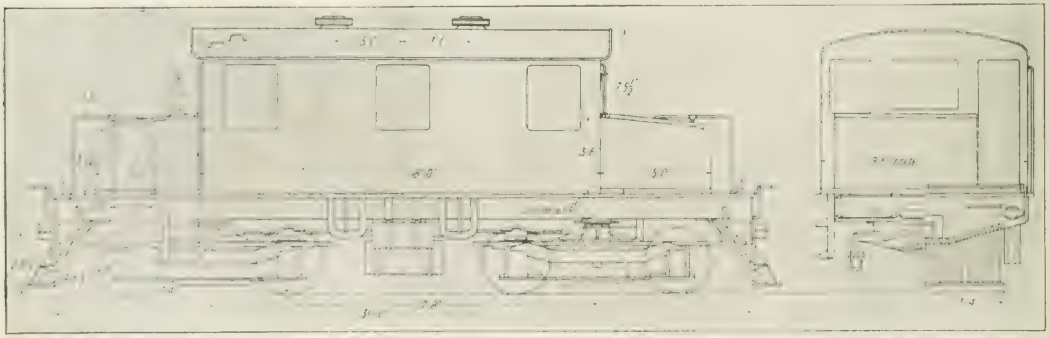
The B.C. Electric Ry. Co. has recently received five 50 ton electric locomotives for freight service, which are similar to some 60 ton ones built recently for the Southern Pacific Co. They are standard gauge, and are of the double truck type, with a central cab of the steeple type. This type of locomotive, because of its flexibility and simplicity of construction, is said to be proving very successful in freight, switching and industrial service, where severe operating conditions are frequently met.

Each locomotive is equipped with four Westinghouse 308-D-3 box frame commutating pole 600-1200 volt railway motors, and Westinghouse type hb unit switch control. The 308-D-3 commutating pole motors are adapted to subway, elevated and trunk line railway service. Since this motor is high powered and of the commutating pole type, heavy loads can be handled without encountering motor troubles that are incident to such conditions. The 308-D-3 motor is well adapted where 1,200 volt direct current operation is desired, and for such service two motors are permanently connected in series. The box frame construction is claimed to have decided advantages, on account of its solid mechanical construction and the alignment of all parts. The commutating pole feature of this motor is claimed to make it operate reliably and economically, as heavy overloads can be handled safely and a large range of over voltage is permissible without serious consequences, which is incident to such heavy service in which this equipment operates.

The mechanical features of the motors are of interest. The frame is a one piece steel casting with large openings bored out at each end to admit the armature bearing housings and for taking out the armature.



Fifty Ton Electric Locomotive for British Columbia Electric Railway.



Side and End Elevations, Electric Locomotive, British Columbia Electric Railway.

The weight of the motor on the axle is carried almost entirely by a solid bracket, which extends over the axle. The split of the axle caps is such that the weight of the motor is taken off the axle cap bolts, thus greatly reducing troubles at this point. This type of motor is, it is claimed, easily handled in the shop where travelling cranes are available. The frame has a large lug or nose cast on it which, by means of a truck suspension bar, carries the weight of the motor except that part carried by the axles. Safety suspension lugs provided as an additional safeguard are so arranged that should the main suspension lug break the motor would drop but a fraction of an inch on to the truck suspension bar, causing no trouble. Axle bearing dust guards are provided, which consist of sheet steel casings arranged between the axle bearing housings. The dust guards effectively protect the axle bearings against the entrance of dust and dirt and thereby increase the life of the bearings, gears and axles.

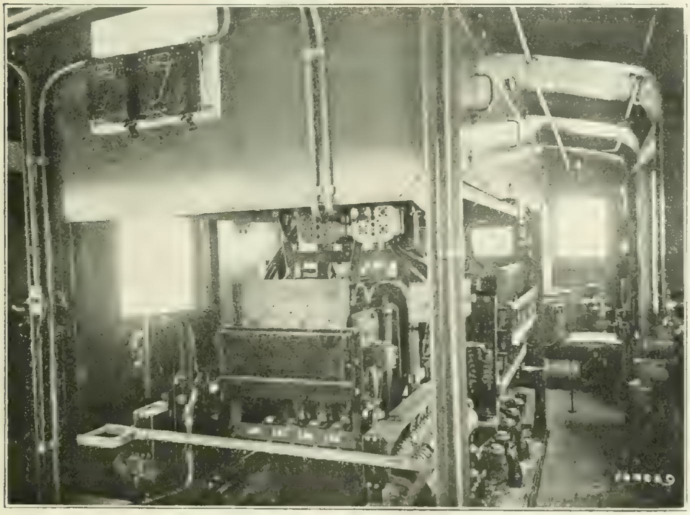
At each inspection of the bearing construction it is possible to gauge the oil by means of a chamber provided for this purpose, which results in economy in oil. Each housing consists of three chambers, an oil reservoir, a waste pocket, and an overflow pocket. Oil is poured into the oil reservoir and then, through a bottom connection, reaches the waste in the waste pocket. The oil then filters up to the bearing by capillary attraction, leaving all dirt at the bottom under the waste. The reservoir has ample capacity and is so located in the bearing housings as to be easily emptied and cleaned.

The Westinghouse unit switch control used is similar to the control used by many electric railways and electrified steam roads. It is claimed that it is especially adapted to locomotive service, where currents of high value are to be handled and broken, for, due to the inherent construction of the unit switch, there is positive action in the making and breaking of circuits carrying heavy currents, and due to the high pressure between contacts made possible by closing all switches by compressed air, no overheating or burning is experienced. It is also claimed to be simple and accessible for inspection, reliable in operation, and economical to maintain.

The control equipment consists of the following principal apparatus:—2 master controllers, 2 switch groups, 2 reversers, 1 series parallel switch, 1 line switch, 1 control resistor, 2 hand operated change over switches, 2 sets of storage batteries (10 cells, each set giving 20 volts). All of the above pieces of apparatus are enclosed in a wire cage supported by an angle iron frame work in the centre of the locomotive cab.

The grid resistors are mounted in the roof of the locomotive cab over the unit switch apparatus, in a portion framed off and ventilated through the roof by two ventilators. Each of the two master controllers have three running notches on 600 volts and two on 1,200 volts. An interesting item of this equipment is a series parallel switch, which is controlled by a single pole double throw knife switch at either end of the cab. On 1,200 volts the connections are so arranged on the change over switch that the series parallel switch is in the 1,200 volt position, connecting two motors in series regardless of the position of the knife switch.

On 600 volts, the connections on the change over switch are so altered on changing over to the 600 volt position that the motors of each pair, by means of the series parallel switch, may be thrown either two in series or two in parallel, where in the 1,200 volt position the motors are two in series only. This is of particular advantage on 600 volts in accelerating heavy loads. The motors are first connected four in series until the train is started. The controller is then returned to the "off" position, and the series parallel switch thrown to connect the motors of each pair in parallel. The master controller is then operated to connect in "series parallel" and finally in "parallel." In changing over from 1,200 volts to 600 volts, the resistances are paralleled, and also the dynamotor circuits are adjusted for 600 volts. This is all done by the two change over switches.



Cab Interior, Electric Locomotive, British Columbia Electric Railway.

On these locomotives particular care has been taken in arranging the apparatus to facilitate ease of inspection and maintenance. By the control equipment being centrally located, it is accessible from all four sides. This is a distinct advantage to operating companies, since ease of inspection assists in reducing the maintenance.

Two Westinghouse dynamotor compressors are used to furnish compressed air for the brakes and control, a blower fan attached to the dynamotor shaft furnishes the air for ventilating the main motors. One of these is mounted under each end hood. The dynamotor runs continuously, but the air compressor does not run all of the time, it being stopped by a governor throwing the friction clutch out between the dynamotor and compressor. The dynamotor compressor supplies 600 volt current for the lights. A steel air duct built into the frame of the dynamotor compressor delivers air for ventilation to points directly over each motor where by means of canvas ducts the air is conducted to the motors. Two dynamotor switches are furnished, one for each dynamotor. Two transfer switches are used for transferring the lighting load from one dynamotor and the cab lights on the other.

All wiring is put in conduit. A complete type EL combined straight and automatic air brake equipment, with two D3 compressors, each having a displacement capacity of 35 cu. ft. of free air per minute, is included in the equipment for each locomotive.

The trucks are of the equalized pedestal type, with rolled steel side frames and angle iron end frames. They have rigid centres, the bolsters secured directly to the side frames. The bolsters are of cast steel. The truck is kept square by heavy cast steel gusset plates, which are bolted to both side frames and bolster. The springs are half elliptic, and of such length (44 ins.) as to insure easy riding qualities. The wheels are steel tired, with cast iron spoke centres.

The frame is composed of four 13 in. longitudinal channels. These are strongly braced transversely, above the truck bolsters, by means of plate stays, which are riveted to the channels, frame bolster and floor plating. The channels are also braced transversely, midway between the truck centres. The end bumpers consist of steel plates 1 in. thick, to which the coupler pockets are bolted. The couplers are of the M. C. B. type, placed at standard height (34½ ins.) above the rail.

The cab is of steel, arranged for double end operation. It is provided with end doors, and careful attention has been given to such details as hand holds, steps and cab windows. A sloping hood is placed at each end of the locomotive. The floor of the cab is of steel plate, covered with hardwood matched flooring.

The equipment includes air and hand brakes on all wheels, air sanders, a pilot and head light at each end, a bell gong and air whistle.

These locomotives are designed to negotiate curves of 40 ft. radius when running without trailing loads. Their principal dimensions are as follows:—

Wheel base, rigid ......7 ft. 4 ins.; total,	25 ft.
Driving wheels, diameter	36 ins.
Journals	5 x 9 ins.
Width, over all	10 ft.
Height of top of cab	12 ft.
Length between coupler knuckles	35 ft.
Weight	100,000 lbs.

The electric apparatus was built by the Westinghouse Co., and the mechanical parts by the Baldwin Locomotive Works.

Attempt by Board of Health to Regulate Street Railways in Toronto.

On the recommendation of C. J. Hastings, M.D., Medical Officer of Health for the city of Toronto and executive officer of the Local Board of Health, the Board has passed the following regulations:—

"From and after the approval of these regulations, all companies or corporations operating street passenger cars or vehicles constructed and used for the purpose of carrying passengers, whether propelled by horse, electricity or cable power, are prohibited from hauling, carrying or conveying in any car at any one time a greater number of passengers than is equal to 1 2-5 times the proper seating capacity thereof, with the addition of five passengers on the rear platform of each car; and said railway companies or corporations are further prohibited from carrying any passengers between the seats of the open summer cars.

"None of the said street cars or vehicles shall be furnished with cushions, on the seats or backs, made of any material that cannot be readily cleaned and disinfected. and all cars shall be so constructed as to provide for and secure efficient ventilation and heating at all times, to the satisfaction of the Medical Officer of Health. A Fahrenheit thermometer shall be hung in the centre of each and every car.

"Each and every street passenger car used for the transportation of passengers shall, on the days on which it is used for such purposes, be carefully and thoroughly washed and cleansed on the inside, and all cushions and upholstering thoroughly cleansed by means of a vacuum cleaner.

"All straps or hangers on any of the aforesaid cars shall be composed of or covered with celluloid, or a similar non-absorptive material, and must be regularly cleaned, as ordered by the Medical Officer of Health."

The Master Car and Locomotive Painters' Association will hold its annual convention at Ottawa, Ont., Sep. 9 to 12.

Electrification of the Canadian Pacific Railway Rossland Subdivision.

In Canadian Railway and Marine World for May, 1912, mention was made of the contemplated electrification of the C.P.R. Rossland subdivision, in British Columbia, as a means of determining the suitability of electrification for main line operation on the company's line on the B.C. Division, this branch having been selected as an excellent trial portion for this purpose, owing to the heavy nature of the line. At that time, both the alternating and direct current systems were under consideration, and it was only recently that it was decided by the C.P.R. management to adopt the d.c. as best adapted to its requirements.

The section to be electrified runs from Rossland to Castlegar Jct., the junction with the Boundary subdivision. From Smelter Jct. to the end of the section at Rossland, 10.6 miles, is one long continuous grade. The length of the Rossland subdivision is 29.3 miles, which with sidings and yard track mounts up to a total trackage of 43 miles, all laid with 80 lb. rails. From Castlegar Jct. to Smelter Jct., 18.7 miles, there is a ruling gradient of 2.2%, except for a short distance at China Creek hill, where it is 4%. From Smelter Jct. to Rossland is the heavy portion of the line, with a 4.8% ruling gradient, averaging 4% over the section, and a maximum curvature of 20°. One mine switch on this line has a 26° curvature. All grades and curves are compensated.

There is a fairly heavy tonnage to be handled over both portions of the line. The average daily tonnage from Castlegar Jct. to Smelter Jct. (the junction point for Trail, two miles distant on a branch) is 2,489 tons, of which 2,349 are freight. In the opposite direction the figures are 1,039 tons, of which 899 are freight. From Rossland to Smelter Jct. there are 2,110 tons, of which 1,970 are freight; and in the opposite direction 1,910 tons, 1,770 tons being freight. This traffic is now being handled by five locomotives; two of 115% capacity or 23,000 lbs. tractive power, two of 180% or 36,000 lbs., and one of 120% or 24,000 lbs.

The motive power installation will consist of four, and possibly a greater number of, 75 ton electric locomotives with the following general dimensions:—

[illegible]

The locomotives will have four pairs of driving wheels, with no trailing or leading trucks. To each pair of drivers will be geared a GE239 1,100 volt 185 ampere motor, of 270 h.p. each. The impressed voltage will be 2,400, and for slow speed operation, the motors will be operated in series, with series parallel for high speed operation. The operating equipment will be such that three locomotives can be operated in multiple. The trucks on which the motors will be mounted will be articulated, and will negotiate a minimum curvature of a radius of 280 ft., or a curve of 20 degrees. The instantaneous tractive effort will be 45,000 lbs., based on a 30% coefficient of adhesion. The maximum speed on the level with a train of 925 tons will be [illegible] miles an hour. The coasting speed will be 40 miles an hour.

Power will be obtained from the West Kootenay Power and Light Co. at a pressure of 60,000 volts, which will be stepped down to the 2,400 volt line pressure at substations, the locations of which have not yet been determined. The overhead construction will be catenary.

It was announced recently by George Bury, Vice President, C.P.R., in charge of Western Lines, at Winnipeg, that the locomotives, machinery, etc., will be supplied by Canadian General Electric Co., the details in connection with which are being worked out by H. H. Vaughan, Assistant to the Vice President, Montreal.

Montreal Tramways Mutual Benefit Association.

The report for the year ended April 30, 1913, gives the following summary of relief work done, as compared with the preceding year:—

	1912-13	1911-12
Members disabled through sickness or injury	1,205	1,173
Visits made by physicians to disabled members..	[illegible]	626
Consultations given by physicians to disabled members	[illegible]	[illegible]
Prescriptions issued	5,769	5,811
Paid for sickness and injury	[illegible]	$10,274.10
Paid for medicine	[illegible]	$1,725.95
Paid for pensions	$408.50	$354.50
Paid for withdrawals ..	[illegible]	[illegible]
Paid for death and burial insurance	$7,083.34	$12,533.35

Fourteen members died during the year and two had their benefits commuted. The ninth annual picnic netted a profit of $9,590.29. The Montreal Tramways Co. gave a special Christmas donation of $4,000, making the total contributions received from the company $18,318.71, which, added to fees and dues received from members, viz., $15,651.00, the proceeds of the picnic, and the interest on investments and bank deposits amounting to $15,506.52, made a total revenue for the year of $50,476.23, and the expenses being $28,795.42, left a surplus of $21,680.81.

Since the Association's organization the following amounts have been paid in benefits:—

Death and burial insurance	[illegible]
Sickness and injury benefits	83,765.25
Medicine	[illegible]
Medical attendance	[illegible]
Pensions	1,754.50
Refunds	[illegible]
Total ..	[illegible]

The initiation fee for members is $1, and the monthly fee, 50 cents, which secure the following benefits:—

In cases of disablement after the first 6 days, 60 cents a day for 90 days, and 30 cents a day for the next 90 days; free medical attendance; free medicine; 20% discount on all medicines, etc., required by members of the family; a life insurance policy of $500 and $50 towards cost of funeral expenses; a pension when superannuated and too old to work; members leaving service after 5 years membership are entitled to a refund of one third of fees and dues paid in by them, less amount received in benefits; members leaving service after 10 years membership are entitled to a refund of two thirds of fees and dues paid in, less amount received in benefits.

The principal officers of the Association are:—President, J. E. Hutcheson, General Manager, Montreal Tramways Co.; Secretary-Treasurer, Patrick Dubee, Secretary-Treasurer, Montreal Tramways Co.

Wheel Guards on Montreal Tramways Company's Cars.

Some little time since the Montreal Tramways Co. applied to the Quebec Public Utilities Commission to suspend its order of Nov. 18, 1910, special direction No. 4, in regard to single truck cars until a compensating device could be thoroughly tested. The committee accordingly directed that tests should be made under direction of A. Fregon, who reported the results of a number of tests from which he concluded that the compensating device could be effectively used in connection with the H. & B. wheel guard upon single truck cars, and that the same would be advantageous for further protection to the public in the operation of the company's system.

The commission then ordered that all single truck cars in use upon the company's system shall be forthwith equipped with the H. & B. wheel guard and trip gate, with the compensating device, reported upon, to operate with the trip gate so as to overcome the difficulty from oscillation in the use of this class of car. The company shall report each month the number of single truck cars in use and the number so in use thus equipped, such equipment to proceed with all possible diligence.

The order respecting the abolition of single truck cars is not to be considered as in any wise modified by this order, but such abolition shall proceed as directed by order of Nov. 18, 1910.

Regina Municipal Railway Notes.

Some weeks ago the ratepayers voted in favor of the operation of the railway on Sundays, the vote being 473 for, 82 against. The Sunday service was inaugurated June 22, when about 9,000 passengers were carried, the revenue being about $400.

A shipment of 8 double truck p.a.y.e semi convertible cars has been received from Preston Car and Coach Co., which makes the total rolling stock, 18 double truck and 6 single truck cars. Following are the principal dimensions of the new cars:—

Length of car body	28 ft.
Length of front vestibule (outside)	5 ft.
Length of rear vestibule (outside)	7 ft.
Projection of bumpers	6 ins.
Length of car over bumpers	41 ft.
Width of car over side sheathing.....	8 ft. 4 ins.
Width of car inside	7 ft. 8 ins.
Height of car from bottom of sills	8¼ ft.
Width of front vestibule door	30 ins.
Width of rear vestibule door	48 ins.

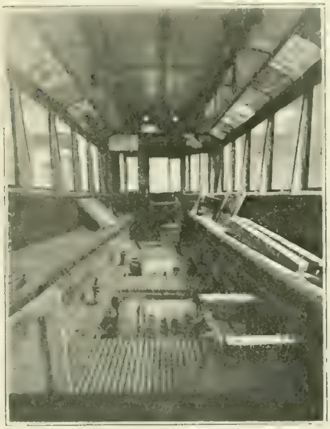
A Regina correspondent wrote us recently that there was a possibility that workmen's special tickets would be done away with, as it was believed that few availed themselves of the opportunity the cheap fare affords for going home to dinner. We are officially advised that the management has no such intention. These tickets are sold at 8 for 25 cents. They are good from 6 to 8 a.m.; 10.30 a.m. to 1.30 p.m.; and 5 to 7 p.m.

Following are particulars of revenue and passengers carried for 10 weeks up to June 21, when the line was operated 6 days a week. Sunday operation commenced June 22:—

				Revenue.	Passengers.
Week	ended	April	19.	[illegible]	68,104
"	"	"	26.	[illegible]	68,616
"	"	May	3.	[illegible]	[illegible]
"	"	"	10.	[illegible]	[illegible]
"	"	"	17.	[illegible]	[illegible]
"	"	"	24.	[illegible]	76,055
"	"	"	31.	[illegible]	74,277
"	"	June	7.	[illegible]	[illegible]
"	"	"	14.	[illegible]	[illegible]
"	"	"	21.	[illegible]	[illegible]

Tractor Emergency Car on Dominion Power and Transmission Co.'s Line.

During the past spring a portion of this company's line on the Radial Division, including the portion of the city service that operates to the industrial area in the east end of Hamilton, was flooded by the high water of Lake Ontario. This short section of possibly a quarter mile follows a narrow shore inlet, over which pass two steam railway lines. To obtain the necessary clearance under these two bridges, it was necessary for the electric line tracks to be set near the water level, and in consequence the high water flooded the line.



Motor Suspension for Operation Through Water Covered Tracks.

Operation through this section of the line was made impossible to the regular equipment, from the presence of the water, and in order to carry on the service with as little interruption as possible, an old car was partially converted to act as a tractor for trailer cars through this section, the passengers being transferred at both ends of the short run to the regular cars. Passing the regular cars, with the motors low set as in the normal installation, would lead to numerous burnouts.

The arrangement of the tractor car is shown in the accompanying illustration. It was an old single truck motor car, carrying two motors, which are normally suspended from the truck framing at the casing end and on the axle on the pinion side. In the makeshift arrangement adopted, both motors were disconnected from their rear frame support, and swung up through the floor about the axle support. Along the floor of the car, in front of the side seats, were placed lengths of 3 in. angles, from which the frame of the motor casing was supported by bolts on each side, bearing on small coiled springs. A flexible spring motor suspension was thus obtained, and the motors raised far enough to be clear of water up to about 15 ins. deep.

Citizens of Sydney, N.S., are urging on the Reid Newfoundland Co. the desirability of making its Canadian steamship terminal at Sydney, instead of North Sydney, as at present. It is not likely that such a change will be made, in the near future at any rate.

Betterments and Extensions on the Cape Breton Electric Company's System.

We are officially advised that the following works are being carried out during this season:—Building a two story addition to the present warehouse and freight shed at Sydney; constructing an extension to the car houses at Sydney thereby increasing its capacity 50%—included in this will be a new paint shop and special facilities for more easily handling truck repairs; reconstruction of switch board in power house at Sydney; construction of a 22,000 volt 3 phase transmission line from Sydney power house to Reserve Jct., on the interurban line, with the erection of reinforced concrete substation, in which will be installed at present one 300 k.w. motor generating set for supplying current to the Glace Bay Division—this substation will do away with the operation of the present steam station at Dominion no. 4, and will necessitate the installation on the Sydney end of the line of a bank of 2.250 k.v.a. step up transformers. Oil switches will also be installed in the high tension room of the Sydney power station on this new line, and on the present North Sydney transmission line as well; a telephone despatching system will be installed on the Glace Bay Division; a double track will be built on Townsend St., Sydney, from the car house to Terrace St., with two sidings on the pier line to allow a more frequent schedule to be operated thereon, and two complete supply dry pipe automatic sprinkler systems will be installed in the present Sydney car house and extension. Other minor items include the purchase of shop machinery, railway feeders and overhead ground returns. Much of the work has already been done, and orders have been placed for all the machinery and material necessary for the completion of the work. E. L. Milliken, Sydney, N.S., is Manager. (July, pg. 334.)

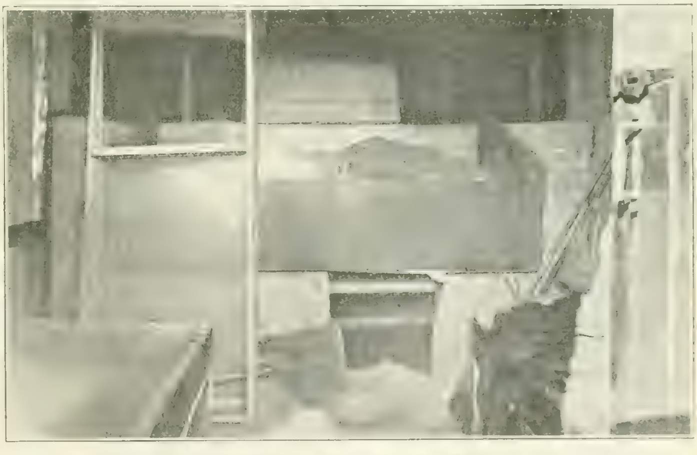
A Car Foreman's Opinion.—B. Bunton, Car Foreman, Grand Trunk Ry., Belleville, Ont., writes: "I cannot be without Canadian Railway and Marine World, as I find it very instructive as well as interesting, and I shall have great pleasure in renewing my subscription when it becomes due."

Judgment Against the Grand Valley Railway.

The case of Allen vs. Grand Valley Ry. Co., et al., was heard in the Trial Court at Toronto, June 30. This was an action by a firm of steel manufacturers at Sheffield, Eng., to recover moneys claimed as balance due for goods supplied to defendant company for use in construction of the railway, and payment of which plaintiffs claim defendants, M. A. Verner, of Pittsburgh, Pa., the President, and W. S. Dinnick, of Toronto, the Vice President, guaranteed. Mr. Justice Kelly gave the following judgment:—"My opinion is that the sureties were not discharged from liability. I find that the period of credit dating from the delivery of the goods had expired at the time the action was begun and that, therefore, these proceedings were not premature. No evidence was submitted to substantiate claims set up in defendant's counter claim. Judgment for plaintiffs for $12,041.91 and interest as claimed and costs, and dismissing defendant company's counter claim with costs." A stay of 30 days was granted.

Sand Drying Plant on Niagara, St. Catharines and Toronto Railway.

At this company's shops in St. Catharines, Ont., there is a complete sand drying plant, housed in a small frame building adjoining the main line, near the main shop building. The size of the plant is shown by the accompanying illustration, which includes practically the whole interior. The sand drying apparatus consists of a shell of brick work, raised about a foot above the ground, into which the wet sand is placed. In the hollow chamber formed by the brick walls under the sheet metal sand box, there are electrical heating coils. These are built up of wrought iron piping covered with asbestos and on which resistance wire is wound. These coils may be seen through the front opening, immediately beneath the sand box. The electrical connections are on the extreme right of the box. In the left foreground, beside the door, is the storage box, into which the dried sand is shovelled. This arrangement is due to W. H. Horton, Engineer of Equipment.



Electrically Heated Sand Drying Plant.

The Medicine Hat Electric Railway.

As previously stated in these columns the electric railway to be built in Medicine Hat, Alta., will be constructed by the Montreal Engineering Co., Ltd., which will complete it and put it in operation before turning it over to Medicine Hat Tramways, Ltd., which will probably have a Dominion charter. This has been the Montreal Engineering Co.'s practice in the past in regard to Porto Rico Railways Co., Camaguey Co. (Cuba), Trinidad Electric Co., etc.

We are officially advised that it is proposed to build 11 miles of track within 15 months, but the location of only a portion of this has so far been announced by the city council. It is hoped to have 3 or 4 miles in operation by Dec. 1, but this depends on the delivery of electrical machinery and rails. The line will be laid with 72 lbs. 6 in. Loraine T. rails. laid with 72 lbs. 6 in. Loraine T rails. vertible, double end control, closed vestibule.

The Ansley spur, which is being built by the city council to connect with an adjacent coal mine, will be electrified and will be maintained and operated by the company under agreement with the city. The company's charter empowers it to carry freight during restricted hours, and an electric locomotive will probably be ordered of a box car type, suitable for carrying building material and other freight to other parts of the city.

The company will not build a power house at first, but will buy power from the city, delivered at 2,200 volts, three phase, 60 cycle, a.c. at 1 cent. per k.w. hour. Later, when the population increases and the company wishes to operate a power house of its own the city will supply natural gas at 5 cents per 1,000 ft.

Motor Bus Traffic in England.

In connection with the recent application of interests allied with the London General Omnibus Co. to the Toronto City Council for an exclusive franchise for the operation of motor busses in the city, the following taken from the evidence of the Managing Director of that company, before a Select Committee of the House of Commons, in London, Eng., might be interesting, as showing the trend of motor bus traffic.

He stated that his company had 32 different types of bus, and in the latest types the laden weight had been reduced from 5 to 3½ tons, and the vehicles were less noisy than formerly. The influence of the police had been very useful, their regulations becoming more and more stringent, thus developing a highly efficient bus. He had had considerable experience in Canada and the U.S. in connection with tramway operation, and in that connection he believed that compared with the early days of electric operation accidents had become rarer, owing to familiarity and the adoption of safety appliances, together with greater care on the part of the public and employes, and he considered that the same would follow on the development of the motor bus. As to the operation of the busses, he stated that they had working agreements with all the tramway companies in London, except the municipal lines, and he considered that the ideal state of things would be that the whole of the busses and tramways should be under one control, not with the idea of creating a monopoly of the traffic, but to lessen danger to the public caused by competition due to multiple control. There were 107 fatal accidents in 1911, and 150 in 1912, but in proportion to the number of vehicles operated, the number of passengers carried, and the mileage, in 1912 the fatalities were less than when compared with the figures of 1911.

Proposed Electrification of the London and Port Stanley Railway.

A. Eastman, General Manager, Windsor, Essex and Lake Shore Rapid Ry., submitted a report, July 14, to the Mayor of London, Ont., dealing with the "estimated amount of earnings and operating expenses of the L. & P. S. Ry., if electrified with ample equipment, terminals and sidings provided, and roadbed put in first class condition." He understood that the cost of doing this work had been estimated at $640,000, which he considered ample. He suggested the provision of terminals at London and St. Thomas, and additions to the terminals at Port Stanley. The rolling stock should consist of 6 passenger motor cars equipped for train operation, with at least 10 trailer cars and 4 electric locomotives, each capable of hauling a 300 ton train.

The estimate of earnings appended should be reached during the second year's operations, and should continue to show an average increase of about 10% a year for the next four years, and possibly after that an annual increase of about 6%. The total earnings he estimated at $210,000, made up as follows:—Passenger revenue, $100,000; freight revenue, $80,000; trackage and terminal rights, $20,000; miscellaneous income, $10,000. The operating expenses he placed at $131,245; and taxes at $3,700, leaving a surplus of $75,055 available for interest on investment, depreciation or profit. The proportion of operating expenses to gross income shows 62%. On the basis of these figures the estimated earnings per car mile are 22.27 cents; estimated earnings per car hour, $5.70.

Another report has been prepared for certain citizens by A. N. Warfield, formerly promotor of the People's Railways at Berlin, Ont., which estimates that operation by steam will produce an annual deficit of $33,444.05; operation by a combination of steam and a storage battery system a profit of $17,667.86; and operation by electricity a profit of $38,034.64.

According to the city year book the bond issue of 1903 amounts to $1,332,854; the amount due the city for interest is $234,992.61; and the capital stock cost $442,340. The first cost of the railway in 1854 was $765,311. The line is at present operated under lease by the Pere Marquette Rd., on a rental and percentage basis which brings in the city about $18,000 a year. This lease expires in 1914, and it is in connection with negotiations for its renewal that the matter of the electrification of the line is being discussed.

London St. Ry.—Gross earnings for June, $29,440.48; expenses, $20,308.01; net earnings, $9,132.44; deductions, $2,526.80; net income, $6,605.64. Aggregate gross earnings for six months ended June 30, $157,874.45; expenses, $114,094.41; net earnings, $43,825.04; deductions, $14,526.84; net income, $29,298.20.

Electric Railway Finance, Meetings, Etc.

Brandon Municipal Ry.—Receipts for the first month of operation ended June 30:—Cash fares, $1,613; tickets sold, $1,776.06; average daily receipts, $135.56; average daily operating cost, $105, interest and sinking fund charges not calculated. Passengers carried, 71,919.

British Columbia Electric Ry—Gross earnings for May, $566,128; operating expenses, $365,401; net operating earnings, $200,727; renewal funds, $51,620; net earnings, $149,107; approximate income from investments, $35,000; net income, $184,107; against $491,826 gross earnings; $313,469 operating expenses; $178,357 net operating earnings; $37,935 renewal funds; $140,422 net earnings; $25,000 approximate income from investments; $165,422 net income for May, 1912 Aggregate gross earnings for 11 months ended May 31, $6,269,123; net earnings, $2,117,280; against $5,251,343 aggregate gross earnings; $1,836,830 net earnings for same period, 1911-12.

Cape Breton Electric Co.—Gross earnings for May, $29,989.33; operating expenses and taxes, $19,11526; net operating earnings, $10,874.17; interest charges, $4,891.67; balance, $5,982.50; bond sinking and improvement funds, $1,190; net balance, $4,792.50, against $28,577.95 gross earnings; $16,192.34 operating expenses and taxes; $12,385.61 net operating earnings; $4,495.83 interest charges; $7,889.78 balance; $1,206.66 bond sinking and improvement funds; $6,683.12 net balance, for May, 1912. Construction charges for May, $3,297.32.

Nelson St. Ry.—A novel situation has arisen at Nelson, B.C., in connection with the proposal to pass a bylaw guaranteeing the company's bonds to the extent of $40,000. Practically the entire stock of the company is owned by citizens, and four out of the six aldermen are among the shareholders. One of the two non shareholding aldermen is opposed to the passing of the bylaw, and if the shareholding aldermen cannot legally vote, the question arises how the popular feeling may be given effect to, without loss of time.

Saskatoon Municipal Ry.—Total receipts for May, $14,094.80, an increase of about $180 over April. Total mileage for the month, 55,481; average receipts per car mile, 25.41c.; average passengers per car mile, 5.69; operating expenses per car mile, 25.405c.

Toronto Ry., Toronto and York Radial Ry., and allied companies.—Gross earnings for May, $811,872; operating expenses, maintenance, etc., $418,415; net earnings, $393,457, against $693,015 gross earnings; $342,545 operating expenses, maintenance, etc.; $350,470 net earnings, for May, 1912. Aggregate gross earnings for five months ended May 31, $3,840,280; net earnings, $1,839,564, against $3,315,739 aggregate gross earnings; $1,696,457 net earnings for same period, 1912.

Winnipeg Electric Ry.—Gross earnings for May, $326,827; operating expenses, $180,275; net earnings, $146,552; against $298,743 gross earnings; $162,364 operating expenses; $136,379 net earnings for May, 1912. Aggregate gross earnings for five months ended May 31, $1,651,336; net earnings, $729,221, against $1,508,300 aggregate gross earnings; $690,817 net earnings for same period, 1912.

The Belt Line Ry.'s horse cars along Tenth Avenue, New York, N.Y., are to be replaced by storage battery cars.

Electric Railway Projects, Construction, Betterments, Etc.

Brandon Municipal Ry.—The Brandon, Man., City Council has decided to extend the present lines, which have only recently been completed on several streets. A. Antonisen, is Superintendent. (July, pg. 344.)

British Columbia Electric Ry.—The last spike of the suburban line along the Saanich Peninsula, connecting Victoria with Deep Bay, 23 miles, was driven by the Premier June 18. A car service was placed in operation June 19. (July, pg. 344.)

The Coquitlam City Council has endorsed the proposal to build a tram line from New Westminster to Port Coquitlam, and a committee is arranging plans and terms with the B. C. E. Ry.

C.P.R. Electric Line—Hamilton to Niagara Falls.—Press reports state that the C.P.R. will build an electric line from Hamilton, Ont., to Niagara Falls, via St. Catharines, and that M. N. Todd, who is President of the Galt, Preston and Hespeler St. Ry., and a director of the Lake Erie and Northern Ry., which is under construction from Galt to Brantford, on the way to Port Dover, and both of which lines are closely allied to the C.P.R., was in St. Catharines, July 21, interviewing the City Council in regard to the matter.

The Dominion Ry. and Plaster Co. was organized under Nova Scotia laws in 1908, the promotors and officials being all practically Cape Breton men. The company proposed to build an electric road from Sydney to East Bay, 13 miles, and to develop a water power for generating electricity. It was intended to use the line mainly for freight purposes, carrying limestone, etc., to the steel works at Sydney. Beyond preliminary surveys, nothing has been done, and it is not thought likely that anything material will be done in the way of construction for the present. (July, pg. 334.)

The Edmonton, Stony Plains and Wabamun Ry Co., which was incorporated in March last, with an authorized capital of $750,000, proposes to build an electric railway from Edmonton to Lake Wabamun, Alta., via Stony Plains, 40 miles. About $60,000 of the capital is reported to have been subscribed locally, and negotiations are in progress for placing a bond issue. The project is regarded favorably, but some doubt is expressed as to whether, in the present state of the money market, a bond issue could be satisfactorily placed. (July, pg. 344.)

Forest Hill Electric Ry.—A draft of the proposed agreement with the York Township Council for the building of an electric line from Forest Hill Road, easterly, 2.5 miles north of Eglinton Ave., north of Toronto, has been under consideration. The agreement provides that construction is to be started, as soon as the plans have been approved, and that $50,000 is to be expended within a year. At a meeting of the York Township Council, in Toronto, July 9, it was resolved that, subject to a proper agreement being entered into, the council approves of the building of the line. The agreement is not to be submitted to the ratepayers for approval, but to the Ontario Government. (June, pg. 286.)

Lake Erie and Northern Ry.—See under Railway Development, in earlier portion of paper.

London and Lake Erie Ry. and Transportation Co.—The refitting of the steam power house at London, Ont., was completed July 5, to ensure the continuance of car service in the event of any accident to the Hydro-Electric power system which has been interrupted rather frequently of late. (Aug., 1912, pg. 421.)

Medicine Hat, Alta.—R. O. Sweezy, General Manager, Montreal Engineering Co., which has secured the franchise for building an electric railway in Medicine Hat, Alta., has been in the [illegible] ing for construction. He stated that orders have been placed in the U. S. for steel rails for August delivery, and that construction is to be started at once on the unpaved streets, working towards the centre of the city. Orders have been placed for a number of single and double truck cars, and for an electric locomotive for switching. It is expected that the car barns and power station will be erected near the Ogilvie flour mills. It is expected that the line will be ready for operation by the end of the year. Mr. Sweezy stated that there was a prospect of the Ansley spur line being electrified and operated by the company, and that was partly the reason why the electric locomotive had been ordered. (July, pg. 344.)

Melita. Man.—Press reports state that a franchise for the building of an electric railway in Melita, Man., has been granted to R. E. Denny & Co., 32 Ninth St., Brandon, Man.

Montreal.—A project for the construction of an underground tramway service in the city has been submitted to the Montreal City Council by F. S. Williamson, M. Can. Soc. C. E. The plans show 12.50 miles of double track lines, and the estimated cost is $20,000,000.

Montreal and Southern Counties Ry.—The Board of Railway Commissioners has authorized the company to operate its cars, carrying passengers, baggage, express and other traffic over the Central Vermont Ry., between the east end of its Southwark yards, St. Lambert and Richelieu, Que., 12 miles, and to use the C.V.R. passenger and freight stations, yards and other facilities. The line was opened for traffic June 28, a through service being given from McGill St., Montreal, to Richelieu. (July, pg. 344.)

Montreal Tramways Co.—Work was started June 23, laying down the new loops and extensions recommended in the engineer's report approved by the City Council June 17. A report was presented to the City Council July 10, showing the work in progress, and stating that it was expected to have it so far completed that the new routes recommended would be in operation by July 31. (July, pg. 344.)

Morrisburg and Ottawa Ry.—Tenders are being asked for the building of 19 miles of line from Ottawa in the direction of Morrisburg, Ont. We are officially advised that this section will terminate at South Gloucester, the intermediate points being:—Billings Bridge, Gatesville, Ridgemount, Ellwood, Henderson Corners, and Lebrun.

The directors and officers are:—President, J. G. Kilt, Ottawa; Vice President, R. J. Biggar, Ottawa East, Ont.; Secretary-Treasurer, R. A. Bishop, Ottawa; other directors:—Jas. Oliver, W. T. Stroder, R. E. Reardon, A. H. Caplan, J. W. P. Bogar. (July, pg. 344.)

Nipissing Central Ry.—The work on the spur line to the wharf at Haileybury, Ont., has been completed, and some parts of the line in the town have been raised, in order to [illegible]

Ontario Hydro-Electric Commission's Proposed Electric [illegible] state that considerable [illegible] made with surveys for the projected electric railway from Toronto to Port Perry, Ont., to be built in connection with the Ontario Hydro-Electric [illegible] power plant. F. S. Gaby, Chief Engineer of the Commission, [illegible] stated that engineers were looking [illegible] the engineering features of the route, and the revenue possibilities of the district, through which the line, 45 miles in length, would run, and that report would be presented to the Commission in due course. (July, pg. 345.)

Ottawa and St. Lawrence Electric Ry.—A bylaw granting a 25 year franchise to the company, with a right of way on certain streets in the town, has been approved by the ratepayers of Morrisburg, Ont. The lines to be built under the franchise are to be completed by Dec. 31, 1914. (July, pg. 345.)

Quebec Rapid Transit Co.—The Dominion Parliament has incorporated a company with this title to build a system of radial lines from Quebec serving Limoliou, Beaufort, Charlesbourg, Riviere Jaune, Lake St. Charles, Indian Lorette, St. Foy, Cap Rouge, Montcalmville, St. Gregoire, St. Anne de Beaupre, and the Isle of Orleans. Nothing appears to have been done in the way of arranging for construction. While the company is authorized to use steam or any other motive power, it is said that the lines, if built, will be operated by electricity. A. Taschereau, Quebec, is interested. (Jan., pg. 21.)

Regina Municipal Ry.—The City Council has under consideration plans for the extension of the city car line into the C.P.R. annex, crossing the G.T. Pacific Ry. at Thirteenth St. The line is also being extended on Young St., to the new power house on Winnipeg and Twentieth Streets. Orders have been placed for supplies for new construction as follows: Steel rails, $12,000; ties, $1,690; cement, $11,000; steel poles, $2,100; trolley wire, $352.40; overhead construction, $592.60. (July, pg. 345.)

Stratford Electric Ry.—We are officially advised that this proposition is dead so far as the franchise given to interests allied with Mackenzie, Mann and Co., are concerned. The Ontario Government desires to have a clause in the franchise providing for the use of current from the Provincial Hydro-Electric Commission, if terms and conditions are equal to those which can be obtained elsewhere or otherwise. Therefore, Sir Wm. Mackenzie would not accept the franchise and build under it. (July, pg. 345.)

Three Rivers Tramway Co.—We were officially advised, July 15, that construction would start in a few days thereafter, it being the intention to build about seven miles of line on the following streets:—St. Roch, St. Philippe, St. Antoine, Notre Dame, Ste. Cecile, St. Paul, St. Maurice, Champflour, Ste. Marie, Niverville, Royale, Des Forges, and also outside of the city to the Cap de la Madeleine. The authorized capital is $500,000, of which $400,000 has been subscribed. The officers are:—President, L. P. Normand; Secretary Treasurer, R. Bournival, Three Rivers, Que.

Toronto Suburban Ry.—A bylaw has been passed by Toronto City Council calling on the company to build and put in operation by Jan. 1, 1914, a line on

Jane St., from Bloor to Annette St.

The town of Weston has asked the company to remove its tracks from the west side to the centre of Main St., from Church St. to the northern boundary of the town.

In connection with the extension to Guelph, a siding has been run on to the right of way at Cooksville, and ties and other materials are being distributed westerly. Grading is completed westerly from Cooksville for several miles, and is well advanced right on to Guelph. Easterly from Cooksville grading is practically finished to near the crossing of the Humber River. (July, pg. 345.)

Winnipeg Electric Ry.—We are officially advised that the company has under construction eight miles of single track on various lines in Winnipeg and St. Boniface, and six miles of suburban track in St. Vital and Fort Garry, Man. Wilford Phillips, Winnipeg is Manager.

We are officially advised that the branch line to Stonewall, Man., which is being built under the Winnipeg, Selkirk and Lake Winnipeg Ry. Co.'s charter, is under construction between Middlechurch and Stony Mountain. It is expected to have the line in operation as far as Stony Mountain by the end of the year. (July, pg. 345.)

Electric Railway Notes.

A Sunday car service was started on the Regina Municipal Ry., Regina, Sask., June 29.

The Halifax Electric Tramway Co. has ordered six box cars, 21 ft. bodies, from the Nova Scotia Car Works.

The Dominion Power and Transmission Co. has received one suburban car from the Preston Car and Coach Co.

The Montreal Tramways Co. put in force July 1, a new rule prohibiting smoking by passengers on the cars.

The Brandon, Man., City Council has authorized the purchasing of ten trailer cars from the Winnipeg Electric Ry. for the Brandon Municipal Ry.

The Regina Municipal Ry. has received five single ended p.a.y.e. city cars, mounted on 21-E trucks, with 8 ft. wheel base, each equipped with Westinghouse 101 B2 motors, double equipment, from the Preston Car and Coach Co.

The Edmonton Radial Ry. has received six single ended, double truck, p.a.y.e. city cars, mounted on O-50 trucks, and equipped with Westinghouse 101 B2 motors, quadruple equipment, from the Preston Car and Coach Co. These are a portion of an order for 35 cars, placed with the company, by the City of Edmonton, Alta, for its municipal railway

The freight shed of the interurban lines of the Dominion Power and Transmission Co., at the corner of Catharine and Main streets, Hamilton, Ont., were destroyed by fire, July 6, the loss being estimated at $75,000. Five freight cars, an auto truck and other stock were destroyed. The sheds belonged to the Hamilton, Grimsby and Beamsville Ry., one of the D.P. and T. Co. subsidiaries.

With reference to a paragraph in our [illegible] in color of painting of the Ottawa Electric Ry. cars, we are officially advised [illegible] that red is a perishable color, the 20 cars [illegible] the company's double truck cars will be [illegible]

The city of Saskatoon, Sask., has awarded contracts, as follows, for material for its municipal electric railway:—copper rail bonds, Canadian General Electric Co.; trolley wire, Eugene F. Phillips Electrical Works; continuous rail joint, Rail Joint Co. of Canada; clinch and splicing ears, Northern Electric and Manufacturing Co.; wood strain insulators, straight line hangers, trolley frogs and trolley guards, Ohio Brass Co.

The ratepayers of Selkirk, Man., by a majority of 367 to 40 have decided in favor of the operation of electric railway cars within the municipality on Sundays. Cars are now in operation from Winnipeg to Parkdale; the municipality of St. Andrews voted in favor of Sunday traffic recently, and the Selkirk vote will enable the Winnipeg, Selkirk and Lake Winnipeg Ry., a subsidiary of the Winnipeg Electric Ry., to operate cars over its whole main line on Sundays.

In dealing with possible acquirements of street railways by municipalities, it is quite evident that in some quarters a few millions on one side or the other is of no particular consequence. Canada, a weekly paper published in London, Eng., recently stated that the purchase price of the Toronto Ry., and the properties allied therewith, which the city of Toronto proposes to take over, is "now stated to be $428,000,000." The price of the stock on the market did not appear to be affected by this announcement.

Personal Paragraphs.

The St. Thomas, Ont., City Council has appointed MISS E. MAXWELL at Secretary-Treasurer of the St. Thomas St. Ry. at $35 a month.

T. BLUNDELL BROWN, and E. Maes Harvey, directors of the British Columbia Electric Ry., arrived in Vancouver, July 5, from London, Eng., for an inspection of the company's various properties in the province.

HAROLD F. COOK, who was recently appointed Assistant to the President, Ottawa, Rideau Lakes and Kingston Ry., Ottawa, was born at Croydon, Eng., June 13, 1888. He attended a four years course in civil and mechanical engineering at the Central Technical College London, Eng., taking his degree in 1909. From June, 1909, to Sept., 1910, he spent some time in aeroplane designing, and also as assistant manager, Bell's Asbestos Co., London, resigning in order to obtain workshop experience, which was done, from Sept., 1910, to Mar., 1913, at the Royal Arsenal, Woolwich.

Canadian Electrical Association.—At the annual meeting in Toronto recently the following electric railway officials were elected to office:—President, D. R. Street, Secretary Treasurer, Moose Jaw Electric Ry. Co.; Managing Committee—A. A. Dion, President, Moose Jaw Electric Ry. Co.; H. G. Matthews, General Manager, Quebec Railway, Light, Heat and Power Co.; E. L. Milliken, Manager, Cape Breton Electric Co.; R. H. Sperling, General Manager, British Columbia Electric Ry.

A Master Mechanic's Opinion. — T [illegible] Master Mechanic, Algoma Central and Hudson Bay Ry., and Algoma Eastern Ry., writes Canadian Railway and Marine World as follows: "Enclosed is express order to pay for my renewal subscription to your valuable magazine. I wish it every prosperity and continuous success."

Telegraph, Telephone and Cable Matters.

A. W. Bell has been appointed agent, Great North Western Telegraph Co., at Midland, Ont., vice Miss Switzer, resigned.

The New York Central and Hudson River Rd. is installing telephone dispatching circuits on its Adirondack Division, from Utica, N.Y., to Adirondack Jct., Que., the dispatcher being located at Utica.

E. M. Payne, heretofore Inspector of Telegraphs, Manitoba Division, C.P.R., Winnipeg, has been appointed Superintendent of Telegraphs, Manitoba Division, C.P.R., Winnipeg, vice J. McMillan, promoted.

The telephone cable which has been laid between Vancouver and Vancouver Island, B.C., is 35 miles long, and at one point on the route the water is 1,356 ft. deep. The cost of laying it is given as $20,000, and the cable was made in England at a cost of over $100,000.

The Newfoundland Government, it is announced, will erect about 250 miles of telegraph line along the coast during this year, and will also establish a telephone system in St. Johns and other outlying places, as well as build three wireless telegraph stations in Labrador.

John McMillan, heretofore Superintendent of Telegraphs, Manitoba Division, C.P.R., Winnipeg, has been appointed General Superintendent of Telegraphs, Western Lines, C.P.R., with office at Winnipeg, vice B. S. Jenkins, who has been assigned to other duties in the east.

The Great North Western Telegraph Co. has reopened its offices at Clifton House, Niagara Falls; Crystal Beach, Petawawa Camp, Port Cockburn, Queens Royal Hotel, Niagara on the Lake; Royal Muskoka Hotel, Ont.; Abenakis Springs, Chaudiere Basin, Manoir Richelieu, Pointe a Pic, Paspebiac, Que., for the season.

The following appointments in the Grand Trunk Pacific Telegraph Co.'s service have been made recently:—R. M. Hicks, heretofore city manager, Saskatoon, Sask., has been appointed city manager at Edmonton, Alta., vice W. G. M. Corregan, resigned; J. D. Edgett, heretofore night manager at Winnipeg, has been appointed city manager at Saskatoon, Sask., vice R. M. Hicks, transferred; A. J. Hoag has been appointed night manager at Winnipeg, vice J. D. Edgett, promoted; E. H. Hiscock has been appointed electrical inspector at Edmonton, Alta.

The Dominion Telegraph Co.'s report for the year ended June 30, shows assets of $1,309,702.94, and liabilities of $1,017,180.93, with a balance to credit of profit and loss account of $292,522.01. Payment of the guaranteed 6% interest on the capital stock has been paid regularly quarterly in advance, for the past 34 years. The property is leased to the Western Union Telegraph Co. for 99 years, from July 1, 1879. The officers and directors for the current year are: President, T. Swinyard; Vice President, Sir Henry M. Pellatt; Secretary and Treasurer, F. Roper; other directors, B. Brooks, T. F. Clark, R. C. Clowry, Aemilius Jarvis, C. O'Reilly and A. G. Ramsay.

The Port Arthur and Fort William Electric Ry. created a record for one day's business, July 1, when it carried 32,000 passengers.

Marine Department.

Grain Shipping Facilities in Montreal Harbor.

The illustrations on this and the following page show the grain shipping facilities, etc., in Montreal harbor. At the extreme left of the panoramic view is shown the 1,100,000 bush. steel elevator, marine tower and shipping galleries built for the Grand Trunk Ry. A 665,000 bush. reinforced concrete storage addition to this plant is being built.

Grain Shipping Facilities at Montreal (Continued below.)

The elevator next at the right is the 1,000,000 bush. steel structure, with two marine towers, owned and operated by the Harbor Commissioners. Since the photograph was taken, construction has been started on a 1,500,000 bush. reinforced concrete addition to this elevator.

The largest elevator in the illustration is the 2,600,000 bush. reinforced concrete elevator no. 2 of the Harbor Commissioners. Its steel marine tower, with two unloading legs, is seen above the end of one of the piers. This elevator was completed in 1912.

The G.T.R. elevator, with 1,400 ft. of shipping conveyor galleries, serves two steamer berths.

Grain Shipping Facilities at Montreal (Continued from above.)

The Harbor Commissioners' elevators no. 1 and no. 2 are interconnected to serve 19 vessel berths. The shipping galleries are 2 1-3 miles long and contain 10½ miles of rubber belting.

With the completion of the above, grain can be handled in Montreal harbor as follows:—Receiving from cars, 625 cars in 10 hours; receiving from lake vessels, 82,000 bush. per hour; shipping to ocean vessels, 180,000 bush. per hour; total storage capacity, 6,865,000 bush.

The panoramic view photograph and the plan from which the illustrations were made were furnished by John S. Metcalf Co., Ltd., Montreal, who built the Harbor Commissioners' elevator no. 2 and the G.T.R. elevator, and designed and equipped the gallery system for the Harbor Commissioners' two elevators. They are now building the 1,500,000 bush. addition to the Harbor Commissioners' elevator no. 2.

Proposed Weir in the Niagara River.

The International Waterways Commission has, through the President, recommended to the United States Congress the construction of a weir in the Niagara River, to raise the level of Lake Erie. The commission stated the value of the proposed work to Lake Erie ports could hardly be estimated and that it would result in extensive improvements to harbors and docks.

The cost of the weir and consequent works to avoid damage to property is estimated at $3,500,000. The commission recommended its location at Grill Creek on the U.S. shore and Hog Island on the Canadian, just above Welland River. The dam would raise the level of the Niagara 3 ft. for a distance of 1½ miles. The commission suggested the construction of a levee to prevent damage to adjoining property.

At low water the level of Lake Erie would be raised 0.51 ft. at extreme low stage, 0.39 ft. at mean, and 0.11 ft. at extreme flood stage. The commission reported that the plan would raise the mean level of Lake St. Clair 0.23 ft. and that of Lake Huron 0.09 ft.

The commission also reported that the weir would eliminate any injurious effect upon the Lake Erie level of diversion of waters at Niagara Falls for water power purposes, and would reduce the range of oscillation on Lake Erie 4½%.

The report pointed out that diversion of water to the Chicago Drainage Canal, to the Erie Canal and for power plant purposes at Niagara Falls had considerably reduced the level of Lake Erie.

Electrically Propelled Vessels for the Great Lakes.

The recent launching of the Montreal Transportation Co.'s electrically propelled vessel Tynemount, at Newcastle-on-Tyne, Eng., will to a great extent settle the question as to how far electricity can be utilized in the propulsion of heavy cargo vessels, and as to what economy can be effected, both in cargo space, and in operation on the Great Lakes. The propelling machinery of the Tynemount is a combination of a Diesel engine and electric motor, the latter being direct connected to the propeller, and this is the first time that the principle has been applied to, what may be termed, an ocean going vessel. Certain conditions of operation on the Great Lakes, and especially through the canals, make it necessary to have the largest coarse pitch propeller which can be driven by an ordinary triple expansion engine at about 80 revolutions a minute. Diesel engines run at about 400 revolutions a minute, but in the system in use on the Tynemount this speed can be reduced, as between the engine and the propeller, by means of the electric transmission. The whole system, especially for lake navigation, is yet in its very early stages, and any movement will be watched with considerable interest by those concerned. There are quite a number of experienced navigators on the Great Lakes who are firmly of the opinion that the reciprocating engine is the only one for safe navigation through the numerous locks connecting the Great Lakes up to the present, and are content to wait for further developments before committing themselves to [illegible]

Stranding of the s.s. Wabana

[illegible] off [illegible]

[illegible] left. 6. Their regular shape facilitates stor- [illegible] 8. The range of the [illegible]

[illegible] be to the committee's satisfaction.

[illegible]

Efficient means must be provided by wells and sparring or lining to prevent [illegible] cargo or into the ordinary engine room bilges.

[illegible] for carrying liquid fuel, the ceiling must [illegible]

[illegible] absolutely distinct from those of other [illegible] for approval.

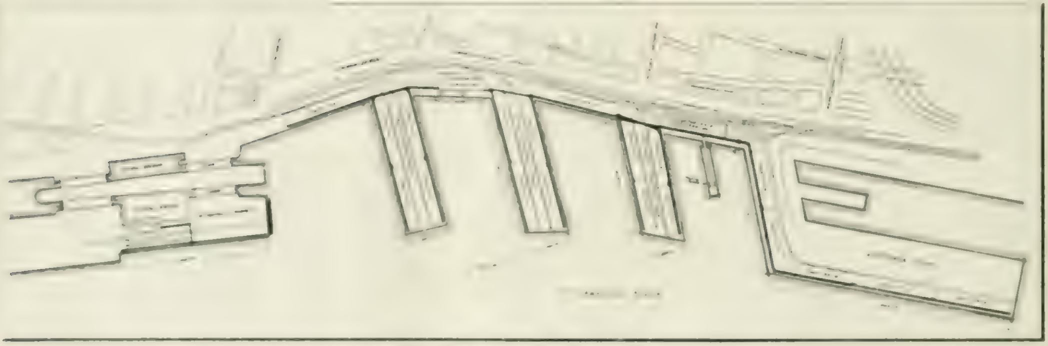
If it is intended to sometimes carry oil and sometimes water ballast in the various [illegible] valves controlling the connections between [illegible] arranged that the suctions for each separ- [illegible]

[illegible]

Where oil fuel compartments are at the [illegible] from the boilers, their smoke boxes, cas- [illegible]

[illegible]

[illegible] only to the case of oil fuel, the flash point of which as determined by Abel's [illegible]



Montreal Harbor Terminal Facilities

[illegible] in accordance with the rules of safe navigation.

Solid Oil as Marine Fuel

[illegible]

Lloyd's Rules for Pumping and Carrying Liquid Fuel

[illegible]

The Meaford Elevator Co.'s elevator with about [illegible] of grain in transit to [illegible] and Son Ltd., Kingston, was destroyed by fire, July 9. The loss is partly covered by insurance.

Atlantic and Pacific Ocean Marine.

The Union Navigation Co., Ltd., H. J. Donelly, Secretary, has changed its head office from Toronto to Montreal.

The depth of the St. Lawrence ship channel, on July 1, was 31 ft. 11 ins., compared with 31 ft. 5 ins. at the same date last year.

The Union Steamship Co., of New Zealand, which holds the contract for the Canada-Australia mails, has chartered the British s.s. Canada Cape for the Vancouver run, as an extra vessel, next fall.

From the commencement of the St. Lawrence navigation season to June 30, 271 ocean going vessels, with a tonnage of 898,651, entered Montreal harbor, an increase of 44 vessels and 257,396 tonnage over the the same period in 1912.

A Pacific Coast report states that the Great Northern Steamship Co.'s s.s. Minnesota, which runs between Seattle, Wash., and Orient ports, will shortly make Victoria, B.C., a regular port of call.

It has been held in the British Courts that the conditions as printed on the passenger tickets, issued by the White Star Line, which have recently come under review, during claims for damage and loss occasioned by the wreck of the s.s Titanic, are illegal.

A. Piers, Manager, C.P.R. Steamship Lines, Liverpool, Eng., has arranged for two additional hammocks in the Lancashire and National Sea Training Home for Boys, at Liverpool, to be known as Empress Hammocks. They will be supported by the officers and crews of the C.P.R. steamships Empress of Britain and Empress of Ireland.

A press dispatch from London, Eng., states that a contract has been signed for the construction of a railway and harbor on the west coast of Ireland in connection with the all red route scheme. The railway, it is said, will run from Collooney to Blacksod Bay, County Mayo, from which port vessels will run to Halifax, N.S., in 3½ days.

Quebec press reports state that it is probable that the Hamburg-American Line will commence a steamship service on the St. Lawrence route in the near future, making its port on the east end of the Isle of Orleans, and connecting with the city of Quebec by a bridge across the river between the Falls and the Island. It is stated that the company has an option on about 10,000 acres of land, or has made the purchase, and a final decision is expected shortly.

An English press dispatch states that the s.s. St. George, recently purchased from the Great Western Ry. of England, by the C.P.R., for service between Digby, N.S., and St. John, N.B., as mentioned in our last issue, will be towed across the Atlantic, by the Liverpool steam tug Blackcock, as it appears it is not possible to bunker her sufficiently for the trip. She will, however, have a full crew on board, and will be fully coaled in case she is separated from the tug in bad weather. It is said to be somewhat new for a fully powered and large steamer to be towed across the ocean while not being disabled in any way.

Maritime Provinces and Newfoundland.

Steamship owners in Nova Scotia have granted increases of pay at various rates to all marine engineers in their employ.

It is reported that a suitable site has been selected for the construction of a vessel repairing dock at Burin, Nfld., and that negotiations for its purchase are being pushed, so that the company interested in the project may proceed with the work immediately.

We are officially advised that press reports as to the possible construction by the Dominion Government of "a great shipyard capable of permitting the construction of small cruisers and other war vessels" at Charlottetown, P.E.I., are without any foundation in fact.

Consumers Coal Co., Ltd., has been incorporated in New Brunswick, with a capital of $49,000 and office at St. John, to deal in coal and other fuel, and also to carry on a general navigation and carrying business, and to own and operate vessels, elevators, warehouses, etc.

The Dominion Coal Co.'s s.s. Cacouna collided with the schooner Sarah A. Townsend, July 11, the latter being so badly damaged that she was abandoned. She was later towed to Cape Traverse, where her cargo of lumber was discharged. The Cacouna proceeded to Charlottetown, P.E.I., for temporary repairs.

The Dominion Government hydrographic steamship Acadia arrived at Halifax, N.S., from Newcastle, Eng., July 8. It is announced that she will be placed in service as soon as possible, and proceed to Hudson Bay, for hydrographic and survey work in connection with the proposed harbor and terminal work there.

A survey of the Dominion Coal Co.'s s.s. Wabana showed that she was more seriously damaged in her recent accident than was surmised. The bottom is badly set up on both sides for about 200 ft., and about 130 plates and topsides are leaking, in addition to a certain amount of damage to her machinery. She is insured for about £48,000.

At a meeting of the North Sydney Board of Trade recently, it was stated that the Reid Newfoundland Co. had made complaint of the amount of pilotage and harbor dues it was compelled to pay on vessels entering North Sydney harbor, and figures were quoted showing that the company is taxed about $1,100 a year for harbor dues, and $12.50 a day pilot dues, which was considerably in advance of what it would have to pay if Sydney were made its Canadian terminal. A committee was formed to interview the Harbor and Pilot Commissioners, with a view to having the charges decreased. A movement is on foot in Sydney to urge the Reid Newfoundland Co. to change its terminal to Sydney, but it is not likely that such a change will be made, at any rate for the present.

The Cape Breton Electric Co. is having a ferry boat built for its service between Sydney and North Sydney, N.S. She is being built at Portland, Me., of white oak frames and timbers and planked with hard pine. Ample provision will be made for carrying freight, the entire lower deck forward being enclosed for the purpose, and will be sufficient for carrying teams and automobiles. On completion the hull will be towed to Yarmounth, N.S., where the machinery, now being made there, will be installed. The propelling machinery will consist of triple expansion engine with cylinders 12, 19 and 30 diar., by 30 ins. stroke, supplied with steam by a two furnace Scotch marine boiler at a working pressure of 160 lbs. Complete electric lighting equipment will also be supplied. It is expected that the boat will be completed and ready for service about the middle of December.

Province of Quebec Marine.

The U.S. s.s. Wallula was recently seized at the Lachine Canal, for non payment of towage dues.

The Department of Marine has established a series of five buoys to mark the channel leading to the floating dry dock in Montreal harbor.

The Montreal, Valleyfield and Soulanges Navigation Co., Ltd., has registered its head office at 404a St. Joseph St., Lachine.

The Quebec Harbor Commission has received three switching locomotives from the Montreal Locomotive Works. Details of these were given in a previous issue.

The Dominion Government s.s. Dollard, for use in the St. Lawrence lighthouse and buoy service, has been delivered to the Marine Department by the builders. She has been equipped with a wireless telegraph installation.

Work is in progress on the crib work for a wharf 4,000 ft. long at Quebec, which is to be used in connection with the National Transcontinental Ry., and for the car ferry connecting the north and south shores, which is expected to arrive at Quebec next spring.

It is announced in Montreal that the Harbor Commissioners will undertake the extension of all piers in the harbor, at an approximate cost of $1,000,000. It is estimated that about 250 ft. will be added to each pier at the west end, with the possible exception of Victoria pier, thus giving accommodation for eight more vessels.

A. Johnston, Deputy Minister of Marine, and a number of the Department's officials, accompanied the members of the Lighthouse Board, on an inspection of the lights in the St. Lawrence ship channel, July 9 to 11. Complaints had been made by pilots between Montreal and Quebec that the red lights on the route were ineffective, and it was suggested that white lights should be used instead, but after the official inspection it was announced that the present system of red lights would be continued.

W. G. Ross, Chairman, and Farquhar Robertson, of the Montreal Harbor Commission, had a conference with the Minister of Marine, July 11, concerning the proposed acquisition of certain lands on the Lachine Canal and the harbor front near the G.T.R. elevator. The Commission wants to extend the harbor facilities and provide extra shed accommodation, and according to the terms of the leases under which the land is held the Government can, if the property is required for Government purposes, give the lessees two months notice of its intention to take over the land.

Ontario and the Great Lakes.

The Richelieu and Ontario Navigation Co. was fined $200 in each of seven cases, at Toronto recently, for selling intoxicating liquors on its passenger vessels.

The Canadian Towing and Wrecking Co., Ltd., has increased its capital stock from $100,000 to $200,000 by the issue of 1,000 new shares.

The steamboat City of Montreal, which was formerly owned by the Montreal and Lake Erie Steamship Co., and which, as announced in our last issue, was recently acquired by J. H. Hall, Ottawa, has had its name changed to Westerian.

The large grain elevator at Point Edward, in which the G.T.R. is chiefly interested, was destroyed by fire, July 7, together with about 72,000 bush. of grain. The elevator was built in 1904. The loss is estimated at $350,000.

An Ottawa press report states that the formation of a co-operative steamhsip company, to operate a line of steamships between Montreal and the head of the lakes, is being considered by a number of large wholesalers in eastern and western Canada.

The contractors' plant which was utilized some time ago in connection with the building of the Newmarket Canal, and which has been lying idle for nearly two years, has been removed, any further work on the project having been abandoned by the Government.

The Department of Public Works will receive, to Aug. 25, tenders for the construction of a sea wall, breakwater, ship channel and retaining wall, in connection with the scheme of general harbor improvement and development being carried on at Toronto.

The city of Fort William, which has been arranging for the construction of three tunnels under the rivers surrounding the city, is negotiating with the Dominion Government for permission to proceed with the work, as the Government controls all navigable streams.

The Marine Department will receive tenders to Aug. 22 for a single screw steel steamboat for the lighthouse service. The principal dimensions will be: length between perpendiculars, 155 ft.; length over all, 164½ ft.; breadth moulded, 30 ft.; depth moulded, 13 ft.

The Canada Interlake Line s.s. A. E. Ames ran ashore at Salmon Point, about 40 miles west of Kingston, July 4. She was released July 9, and discharged her grain cargo at Kingston. As the Kingston dock was engaged and booked ahead, the A. E. Ames had to go to a U.S. dock for repairs to her hull.

The small steam tug W. H. Price, owned by J. H. Daball Parry Sound, was burnt there, June 29, and sank where it is not possible to raise her. She was built at Collingwood in 1903, and was screw driven by engine of 2 n.h.p. Her dimensions were:—Length, 38 ft.; breadth, 10 ft.; depth, 4.6 ft.; tonnage, 13 gross, 9 register.

The National Steamship Co., Ltd., has been incorporated under the Dominion Companies Act, with $2,000,000 capital, and office at Toronto, to carry on a general navigation business, and to own and operate vessels of every description. The incorporators are: Cawthra Mulock, G. F. Perry, J. B. Foote, E. H. Laschinger and M. Stobie, Toronto.

The results of the Canada Interlake Line's motor vessel Fordonian's first trip to the head of the Great Lakes are reported to be entirely successful, an average speed of 11½ miles an hour having been made. It is stated that the company is considering the question of ordering another similar vessel for the same route.

The steamboat Pontiac, at one time owned by the Prescott and Ogdensburg Ferry Co., and latterly by J. Smith, Toronto, was destroyed by fire at Toronto, July 6. It is stated that it was the work of an incendiary, a similar attempt having been made last year. About three months ago she sank at her moorings and had only recently been raised and repaired prior to again entering service.

The Pembroke Transportation Co., Ltd., which was recently incorporated under the Dominion Companies Act, with $40,000 capital, and office at Pembroke, Ont., has purchased the steamboat Victoria, formerly owned by the Pembroke Navigation Co., and has had it overhauled, remodelled and renamed Oiseau. W. A., W. L., and J. C. Hunter, Pembroke, are chiefly interested in the company.

The dredging, which was started last year, of the slip to the Government elevator at Fort William, is being proceeded with, with the intention of completing the whole contract as soon as possible. The work also covers the opening of the channel to the Canadian Northern Ry. coal dock, dredging the approaches to the dry dock, and the slip to the shear legs at Bare Point. The contract is for $122,460, and is held by W. E. Phinn.

The U.S. Lake Survey reports the levels of the Great Lakes in feet above tidewater, for June, as follows:—Superior, 602.31; Michigan and Huron, 561.20; Erie, 573.83; Ontario, 248.02. As compared with the average June levels of the past ten years, Superior was 0.05 ft. below; Michigan and Huron, 0.19 fet. above; Erie, 0.90 ft. above, and Ontario, 1.04 ft. above. It was anticipated that during July Superior would rise about 0.2 ft., Michigan, Huron and Erie, 0.1 ft., and Ontario remain stationary.

Ottawa press dispatches state that the Railway and Canals Department has let the contract for the first section of the new Welland Ship Canal, which covers about three miles and includes the pier works at the Lake Ontario entrance and lock 1, to the Dominion Dredging Co. for about $3,000,000, and that construction will be started at once. The engineering staff is reported to be at work on specifications for sections 2 and 3, and it is said that tenders will be invited for them in the near future.

The C P R s.s. Athabasca stranded near Flower Pot Island, at the entrance to Georgian Bay, July 6, during a dense fog. As she is equipped with wireless telegraph she soon had the assistance of her sister vessel the Assiniboia, from Port McNicoll, and also a tug and lighter from Owen Sound. After transferring the passengers and lightering a portion of the cargo she floated off and proceeded to Port McNicoll under her own steam, and without apparent damage.

The Ontario and Quebec Navigation Co. has appointed the following officers for its vessels for the current season. In the first column is given the name of the vessel, the second and third columns giving the names of the captains and chief engineers, respectively:—

Aberdeen	A. Hudgins	W. J. Young
Aletha	D. B. Christie	
Alexandria	J. Rinfret	T. Milne.
Brockville	A. McLeod	A. J. Ramsay
Fairfax	T. L. Vandusen.	D. S. La Rue
Geronia	M. Heffernan	J. D. Andrews.
Lloyd S. Porter	T. Heffernan	S. Thurston.
Varuna	J. Rathbun	J. Walker
Water Lily	M. N. Palmatier	R. Davis

Manitoba, Saskatchewan and Alberta.

The Department of Marine has issued a chart of the Red River, from Winnipeg to Lake Winnipeg.

It is announced that the river and lake traffic with Selkirk, Man., judging by number of vessels and by freight tonnage, shows an increase over last season of approximately a third.

A press report from Regina, Sask., states that the C.P.R. will place a pleasure steamboat in operation on Long Lake, by June, 1914, and that it will erect a summer hotel and resort in the vicinity.

British Columbia and Pacific Coast Marine.

The C.P.R. s.s. Joan has been taken off her route to the Gulf Islands, and taken to Victoria for general repairs to her hull and machinery.

The s.s. Colusa recently arrived at Victoria and Vancouver on her first trip in connection with the new steamship service between Puget Sound ports and Buenos Ayres, South America.

The Dominion Government is making the necessary preparations for a survey of the proposed site for the dry dock to be built at Esquimalt, at an estimated cost of $3,000,000.

The Minister of Marine is visiting Vancouver and the Pacific coast, during which he will inspect various Government works in progress at various points, and will probably visit ports in Yukon.

The Alaska Steamship Co.'s s.s. Dolphin ran ashore near Alert Bay, B.C., June 29, on her first trip for the season to southeastern Alaska ports. The passengers were transferred to the C.P.R. s.s. Princess May, and proceeded on their journey.

The Department of Public Works received tenders to July 23 for dredging in the Pitt River. It is provided that only dredges owned and registered in Canada must be used on the work, which must be commenced within thirty days of the awarding of the contract.

The G.T. Pacific Coast Steamship Co.'s s.s. Prince Albert, which was taken off her route during June, in order that the damages sustained by her striking the docks at Port Simpson might be repaired, was replaced in service, between Victoria, Queen Charlotte Islands and Prince Rupert, July 10.

The Skagway Steamship Co., Seattle, Wash., has been registered under the British Columbia Companies Act to carry on its business in the Province, with J. H. Lawson, Jr., Vancouver, as its attorney. It has a capital of $20,000, and power to carry on a navigation business and other incidental businesses, excepting the construction and operation of railways.

W. P. Hinton, General Passenger Agent, G.T. Pacific Ry., Winnipeg, is reported to have stated recently, in connection with the suggested G.T.P. Coast Steamship Co.'s steamship service to San Francisco, that while it cannot be said that such a service will not be inaugurated at a future date, nothing is being done at the present time toward such a service.

The Mayor of New Westminster drove the first pile of the first unit of the New Westminster harbor improvement scheme, July 3, when it was announced that within a few weeks a contract would be let for the dredging of a deep waterway up the Fraser River to Port Coquitlam. It is hoped that this channel will be completed in time for the maiden sailing of the vessel, now under construction at Port Coquitlam, and which it is hoped to launch within the next month or two, to the West Indies.

Ice Breaking Steamship for the St. Lawrence River.

The Minister of Marine and Fisheries has decided to order another ice breaking steamship for the St. Lawrence River, of which the following are the approximate dimensions:—Length, 275 ft.; breadth, 57½ ft.; depth, 30 ft.; draught, mean, 20 ft.; indicated horse power, 8,000.

The general structure will be of great strength. The framing amidships and approaching the ends forward and aft will be of heavy channel section about 12 ins. deep, spaced about 18 ins. apart. At the extreme ends the spacing will be reduced to 15 ins. The complete transverse framing will be bound inside in every way practicable, in order to form a complete structure in itself independent of the outer plating. The outer or shell plating will be of Siemens Martin ship steel. At the ice breaking water line of the vessel, and running fore and aft for the complete length, a special ice belt will be fitted, 10 ft. deep, having a thickness of 1 1-8 ins. at the stem, reduced to 1 in. at the stern. Forward in the bow, and from the bottom of the ice belt to the keel plate, the plating will for a considerable distance aft be 1 1-8 in. and 1 in. thick respectively. Special provision will be made for protecting the rudder during ice breaking operations.

The watertight subdivision will be complete, and the strengthening of the vessel, particularly forward, will be accomplished in such a manner as experience has shown from vessels at present in service and generally in accordance with the largest European ice breakers. It is proposed to make the form forward similar to that of the Russian ice breaker Ermack, which has proved so successful in ice work, and the beam proposed, which should not be reduced, will be such that ample curvature will be given to the lines, longitudinally and vertically, in order that the minimum of surface may be presented to any ice pressure. The present St. Lawrence ice breakers are defective in this respect.

The machinery will consist of two sets of triple expansion engines having working parts varying from 25 to 50 per cent. in excess of the ordinary practice. The indicated horse power of 8,000 on a 12 hours trial will be developed in 8 Scotch boilers, having a working pressure of 180 lbs. per sq. in., and working under natural draught, and the location of these will be such that full benefit will be derived as a crushing load, should the vessel be driven on to heavy ice, such as is met with at Cap Rouge. Special arrangements will be made in the engine room for large ballast pumps capable of transferring large bodies of water from the after to the forward peak tanks and vice versa.

With a vessel of the above particulars, the ordinary sheet ice formed in the river from 12 to 30 ins. thick will present no difficulties, while the packed ice formed in certain parts of the river, particularly at Cap Rouge, should, with the displacement and power developed, be successfully coped with.

A first class, modern wrecking equipment will be installed on the vessel, and will consist of powerful pumps, etc., but the details have not yet been worked out.

The whole plans are well in hand and every effort is being made to hasten their completion, so that tenders for construction may be invited as early as possible.

New Vessels for Canadian Pacific Railway British Columbia Coast Service.

As stated in Canadian Railway and Marine World for June and July, the C.P.R. has ordered to be built at Dumbarton, Scotland, two steamships to run between Vancouver, B.C., Seattle, Wash., and Victoria, B.C., in what is called the company's triangle service. They are to be built to the British Corporation highest class for awning deck steamships, with freeboard. They are to have cruiser sterns, and will be 395 ft. long over all, 54 ft. broad, and 28 ft. deep to the awning deck. They are to have five decks, viz.: boat, promenade, awning, main and orlop, with deck house on the boat deck. They are to be fitted for oil fuel, and will have double bottoms. There will be 13 transverse bulkheads to the main deck and two longitudinal bulkheads at sides of boiler space, with three large oil tanks on each side of the ship. There will be two watertight bulkheads from the main to the awning decks, and the general design is such that if any two compartments are open to the sea when the ship is in a fully loaded condition, she should still remain afloat.

The [illegible] arrangement will be [illegible] to the [illegible] of the company's ships. All of the decks, with the exception of the boat deck, will be continuous steel decks. There will be 16 [illegible] life boats and [illegible] ing boat, and the general equipment will comply with Canadian regulations for 2,000 passengers in the triangular service.

The public rooms will be handsomely finished in hardwood and furnished luxuriously. There will be sleeping accommodation for about 440 first class passengers, with numerous cabins de luxe, bath rooms, etc. The smoking room will be on the boat deck, and there will be a verandah cafe. The dining room will be on the main deck aft, and will seat about 175 people. Arrangements will be made for tables of various sizes. The room will be lighted by patent 21 in. semi elliptical port lights. The galleys and pantries will be fitted up with all the latest appliances, and ample provision is made for ventilation. A refrigerating plant will be provided, sufficient to take care of the ship's stores.

The ships will be steered by telemotor steam steering gear, and the rudder will be of the spade type and balanced. The motive power will consist of 10 Babcock and Wilcox boilers, arranged for forced draught on the closed stokehold system. There will be three stokeholds and three funnels. Turbine machinery of the latest type will be used for driving the ship. Impulse wheels will be used on the go-astern turbines, and the aggregate horse power will be in the neighborhood of 13,500. All the auxiliary machinery will be of the very latest type, 4 feed pumps, any two of which can supply the boilers at full power. Uniflex condensers of the latest type will be used, also air pumps, evaporators, etc. Three electric engines will be provided, any two of which could carry the full load of 1,500 lights, in addition to electric heaters, motors, fans, searchlight, etc. The speed guaranteed is 22½ knots an hour.

The vessels are to be delivered in the winter of 1914, and it is the intention to provide with them a service in the spring of 1915 which will be superior to anything heretofore undertaken on the Pacific coast.

We are indebted for the foregoing particulars to J. W. Troup, Manager, B.C. Coast Steamship Service, C.P.R.

List of Steam Vessels Registered in Canada during June, 1913.

No.	Name	Port of Registry	When and Where Built	Length	Breadth	Depth	Gross Tons	Reg. Tons	Engines, Etc.	Owner or Managing Owner
131090	Jas. Carruthers	Toronto	1913 Collingwood, Ont	550 0	58 2	26 7	7862	[illegible]	217 n.h.p. sc.	St. Lawrence and Chicago Steam Nav. Co., Toronto.
131016	Margaret A. Hackett	Quebec, Que	1912 Quebec, Que	99 3	24 0	9 2	192	[illegible]	[illegible]	Quebec Transportation and Forwarding Company, Quebec, Que.
133791	[illegible]	Port Stanley, Ont.	1913 Port Stanley, Ont	77 0	[illegible]	7 7	[illegible]	[illegible]	[illegible]	W. H. McPherson, M.O., Port Stanley, Ont.
[illegible]	Princess Maquinna	Victoria, B.C.	1913 Victoria, B.C.	[illegible]	[illegible]	14 5	1777	[illegible]	145	Canadian Pacific Ry. Co., Montreal.

List of Sailing Vessels and Barges Registered in Canada during June, 1913.

No.	Name	Port of Registry	Rig	When and Where Built	Length	Breadth	Depth	[illegible]	Owner or Managing Owner
[illegible]	A. L. Perry	Port Arthur, Ont.	Barge	1904 Duluth, Minn.	109 0	26 0	7 5	178	R. Vigars, Port Arthur, Ont.
133812	David C. Ritcey	Lunenburg, N.S.	Schr.	1913 Liverpool, N.S.	[illegible]	32 0	11 4	284	D. C. Ritcey, M.O., Riverport, N.S.
[illegible]	G. D. No. [illegible]	Montreal	Barge	1913 Grenville, Que.	[illegible]	24 0	7 6	202	G. Dansereau, Grenville, Que.
[illegible]	G. D. No. [illegible]			1913	[illegible]	[illegible]	6 5	[illegible]	
[illegible]	[illegible]	Lunenburg, N.S.	Schr.	1913 Lunenburg, N.S.	104 2	25 8	10 5	92	W. Richard, LaHave, N.S.
133811	J. N. Rafuse			1913 LaHave, N.S.	[illegible]	[illegible]	11 6	212	J. N. Rafuse, M.O., LaHave, N.S.
[illegible]	Robson	New Westminster, B.C.	Dredge	1901 Portland, Ore.	133 0	29 0	[illegible]	464	Pacific Dredging Co., Vancouver, B.C.
[illegible]	Thos. H. Cahoon	Midland, Ont.	Schr.	1881 E. Saginaw, Mich.	[illegible]	[illegible]	10 0	410	E. F. Burke, Midland, Ont.
[illegible]	[illegible]	Halifax, N.S.	"	1913 Mahone Bay, N.S.	[illegible]	[illegible]	[illegible]	78	A. Lapierre, et al, Gran Desert, N.S.

New River Steamboats for White Pass and Yukon Route.

The two new steamboats which the White Pass and Yukon Route has added to its fleet, for service between Dawson, Yukon, and Fairbanks, Alaska, as mentioned in Canadian Railway and Marine World for April, are now on their route, the steamboat Alaska having sailed from White Horse, on her maiden trip of 1,500 miles, to Fairbanks, June 14, and the Yukon following two days later.

The vessels were set up and measured at Seattle, Wash., and then knocked down, shipped to White Horse, Yukon, and put together there. They have saloon and boat decks, with 32 passenger rooms and accommodation for officers. The saloon deck is laid out with large and commodious observation room forward, dining saloon amidships and smoking room and buffet, aft. The propelling machinery consists of sternwheel engines with cylinders 16 ins. diar., by 72 ins. stroke, supplied with steam by local marine boilers. They draw 20 ins. of water with all equipment and stores on board. The first trip, in each case, was from White Horse, but, as mentioned, the regular route is between Dawson and Fiarbanks, about 1,000 miles. The vessels are registered in the U.S., and the company, at the time they were launched, had contracts covering 5,000 tons of freight for conveyance by them. Following are the chief dimensions:—Length, 164.8 ft.; beam, 35.3 ft.; depth of hold, 5.9 ft.; tonnage, gross 765, net 503.

Stranding of the s.s. Kenora.

The Dominion Wreck Commissioner, Commander H. St. G. Lindsay, assisted by Capts. F. Nash and J. McGrath as nautical assessors, held an enquiry recently into the causes of the stranding of the Canadian Lake Transportation Co.'s s.s. Kenora, in Lake St. Louis, June 5. The Kenora sailed from Montreal for Port Arthur, June 4, and after clearing the Upper Lachine canal lock, proceeded to the ship channel, but owing to the smoke from her funnel obscuring the Lachine range lights, she did not maintain her proper course, the strong cross current carrying her to the south side of the channel, where she grounded, doing considerable damage to her bottom. The court is of opinion that the stranding can only be attributed to the smoke obscuring the range lights astern, and exonerates the master and pilot from all blame, and it considers the circumstances so peculiar and unusual that it is unable to make any suggestion that would be likely to help vessels under similar conditions.

Obstructions to Rainy River Navigation.

The Rainy River Navigation Co. was the plaintiff in two actions in which judgment was given in the Trial Court at Toronto, July 16. In the case against the Ontario and Minnesota Power Co., plaintiff claimed $50,000 damages for obstruction of flow of water alleged to be caused by defendant's dam across Rainy River, above the falls. In giving judgment for plaintiff for $540 and costs Judge Britton said: "With some hesitation I have come to the conclusion that the defendants did so interfere with the natural flow of the water from above International Falls into Rainy River as to cause damage to the plaintiff by preventing the running of the Agwinde during part of the season of 1911. Some of the damages claimed by plaintiff has not been proved and are too remote." Thirty days stay of proceedings was granted.

In the other case, against the Watrous Island Boom Co., plaintiff claimed $10,000 damages, alleged to have been sustained by plaintiff through obstruction to navigation by a boom of logs stretched across Rainy River at Hannaford Bar. Judge Britton gave the following judgment: "There must be give and take. In this case defendants' servants made the openings within a reasonable time and gave the plaintiff reasonable facility in navigating the steamer. The plaintiff's claim in this action is quite inconsistent with the claim in the other, where damages are at least in part sought for detention of the same vessel, covering the same period, because of keeping back the water necessary for navigation purposes. The action should be dismissed with costs. Thirty days stay."

Stranding of the s.s. Majestic.

Following is the text of the judgment of the Dominion Wreck Commissioner, Commander H. St. G. Lindsay, concurred in by Capts. F. Nash and J. McGrath, as nautical assessors, in the stranding of the Northern Navigation Co.'s s.s. Majestic, at the time operated by the Richelieu and Ontario Navigation Co. in Lake St. Louis, June 4. The court is of opinion that the master of the Majestic was not justified in accepting the two blast signals from the tug St. Louis, while leaving the Upper Lachine lock and proceeding toward the ship channel, and he therefore committed an error of judgment, and the court considers he should have slowed down and allowed the tug and tow to clear the cut, or have gone ahead and gone to westward of the tow before it came from the cut. The court also considers that the master of the tug was not justified in making the two blast signal, as he apparently made no attempt to keep his tow up on the north side of the cut until it was too late to avoid the accident, and he could, with perfect safety to his tug and tow, have kept on the south side of the channel. It therefore censures both masters and recommends that more care be exercised in future when navigating in narrow waters and especially where cross currents exist.

Government Dry Dock for Levis, Que.

During last year the Dominion Government called for tenders for the construction, within four years, of a dry dock in the Port of Quebec, on a site to be decided by the Government. The work was to be undertaken as a private enterprise, and operated under certain conditions, the Government agreeing to pay a subsidy of 3½% for 35 years on approximately $5,000,000. Surveys of various suggested sites within the port, eventually resulted in the one at St. Joseph de Levis, on the south side of the river, opposite Quebec, being chosen. No satisfactory tenders were received for the undertaking of the work, no tender being submitted in accordance with the terms offered by the Government. It was later decided to take up the question as a Government work, and the contract has been awarded to M. P. and J. T. Davis, Ottawa, at $2,721,116. The dimensions of the dock, which will be a graving dock, and not of the floating type, as at Montreal, will be, approximately, usable length, 1,150 ft.; clear width at entrance, 120 ft.; depth over sill and keel blocks at ordinary high water spring tide, 40 ft. at least. The dock will be built in two compartments.

The Canadian Northern Ry. elevator at Brandon, Man., was destroyed by fire, July 16.

The Alberni Canal Transportation Co., Ltd., has been incorporated under the British Columbia Companies Act, with $20,000 capital, and office at Victoria, to acquire the steamboat College Widow, and to acquire and operate other vessels, and carry on a general transportation business. The College Widow was built at Victoria in 1910, and is screw driven with engine of 10 n.h.p. Her dimensions are: Length, 54.2 ft.; breadth, 15.2 ft.; depth, 7.5 ft.; tonnage, 46 gross, 23 register.

Sault Ste. Marie Canals Traffic.

The following commerce passed through the Sault Ste. Marie Canals during June, 1913.

Articles			Canadian Canal	U. S. Canal	Total
Copper	Eastbound	Short tons		14,622	14,622
Grain	"	Bushels	4,402,246	6,227,737	10,629,983
Building stone	"	Short tons		273	273
Flour	"	Barrels	222,000	861,160	1,083,160
Iron ore	"	Short tons	5,172,615	2,772,643	7,945,258
Pig iron	"	"		4,906	4,906
Lumber	"	M. ft. b.m.	2,885	85,440	88,325
Silver ore	"	Short tons			
Wheat	"	Bushels	7,010,586	4,503,098	11,513,684
General merchandise	"	Short tons	10,706	47,617	58,323
Passengers	"	Number	2,386	2,905	5,291
Coal, hard	Westbound	Short tons	89,833	288,036	377,869
Coal, soft	"	"	558,301	2,043,001	2,601,302
Flour	"	Barrels		163	163
Grain	"	Bushels			
Manufactured iron	"	Short tons	15,742	34,007	49,749
Iron ore	"	"	17,192		17,192
Salt	"	Barrels	3,920	80,264	84,184
General merchandise	"	Short tons	82,539	116,524	199,063
Passengers	"	Number	4,016	1,690	5,706
Summary.					
Vessel passages		Number	1,084	2,329	3,413
Registered tonnage		Net	3,844,306	4,796,136	8,640,442
Freight—Eastbound		Short tons	5,515,007	3,340,814	8,855,821
" Westbound		"	764,167	2,493,625	3,257,792
Total freight		"	6,279,174	5,834,439	12,113,613

The Lloyd S. Porter's Damage to the Welland Canal.

W. H. Sullivan, A.M. Can. Soc. C.E., Superintending Engineer, Welland Canal, has furnished the following particulars of the accident which occurred on Sunday, June 8, about 5 a.m., when all four gates of lock 1, at Port Dalhousie, were carried out and traffic was interrupted for about 36 hours:

The steamboat Lloyd S. Porter, of the Ontario and Quebec Navigation Co., upbound, had just finished laying up two barges and was proceeding to tie up along the east approach wall about 200 yards below the lock, to await the preparation of the lock to receive her. In the meantime, the Nepawah, also upbound, was about midway in the level between locks 1 and 2. The upper gates were still open and the water in the lock at the level of the upper reach. The engineer of the Porter, misunderstanding the captain's signal to reverse, gave her speed ahead. When she was about 50 ft. from the lower gates, the engines were finally reversed, too late. She struck the west gate a blow sufficient to unmiter the gates. The lift at this lock is 14 ft. and the rush of water tore the two lower gates from their anchorages and they became firmly wedged, one above the other, between the lock walls. The sudden rush of water from the reach above also carried out the upper gates down through the lock and over the two lower gates into the harbor below. The captain of the Neepawah, which was approaching lock 2, became aware of what had happened, and, giving his vessel full speed ahead, succeeded in making lock 2 before the water had lowered enough to ground his boat or for the current to carry her back toward lock 1.

The reaches between locks 1 and 2 of both the old and new canals are connected, and, had it not been for the very large pondage thus afforded, the Neepawah would have been unable to get safely in lock 2 and the accident would have been much more serious.

The pondage above lock 1 is so great that it took fully 12 hours for the water above lock 1 to get down to Lake Ontario level. This also delayed the commencement of making repairs and the resuming of traffic after the repairs had been made.

Four spare gates were put in and navigation resumed about 6 p.m. Monday, June 9. The damage was estimated at about $6,000. The Porter received very small injury, her rudder being slightly damaged.

Loss of the s.s. Gerald Turnbull.

An enquiry into the loss of the British s.s. Gerald Turnbull, on the Gannet Dry Ledge, in the Bay of Fundy, May 10, was held recently by the Dominion Wreck Commissioner, Commander H. St. G. Lindsay, assisted by Capts. N. Hall and J. W. Harrison, as nautical assessors. The vessel was on her maiden voyage, and was apparently in good order and condition, well equipped and apparently navigated in a proper and seamanlike manner. The court, after hearing the evidence, failed to find any reason for the master, Alex. Willison, mistaking the lighthouse on Seal Island for that on Brier Island, as the distance between the two is about 50 miles, and considered that if he had taken soundings after sighting the Seal Island light, and taken into consideration the course and distance he had made between the two buoys, on the southwest ledge off Cape Sable, and the second buoy, which appears to have been the Blonde Rock buoy, he would have found out his mistake in ample time to avoid the casualty. After passing Seal Island, and seeing the fishermen and lobster buoys, he ought to have been on his guard, and apparently he was so over confident as to the vessel's positon that he did not use the ordinary prudence necessary for safe navigation. The court suspended the master's certificate for six months. The court also criticized the evident want of a large scale chart on the vessel, as the one which the master used was not safe and proper for the navigation of a vessel in such dangerous waters.

Reversal of the s.s. Bellona Judgment.

A British court, according to reports, has returned the certificate of J. Cunningham, master of the s.s. Bellona, which was suspended in Dec., 1912, for three months by the Dominion Wreck Commissioner, and whose judgment was concurred in by two experienced navigators, as nautical assessors.

In each of the three cases, which have recently been dealt with in this manner, the master was below at the time of the accident, so that it would appear, at first sight, that the reasons for the return of the certificates were one and the same in each case, viz., that, being below, the master was not responsible. This was practically the reason given by the Judge of the Admiralty Court, in the case of the Bengore Head, mentioned in our last issue, but in the other two cases, the reasons have not been stated.

As we have pointed out in previous issues the matter is perfectly clear so far as the Dominion Courts are concerned, that the master is responsible for everything that may happen in the course of navigation, even though a pilot be on board, the latter being there merely in an advisory capacity on account of his local knowledge. If there is anything in the British act, or general practice, covering this point, it would perhaps be as well for the matter to be set right forthwith.

For several years a dead set has been made by a number of interested British and U.S. papers on the St. Lawrence route and its difficulties have been magnified considerably, and yet the conduct of certain ships' masters, with whom is supposed to rest the responsibily for the safety of their passengers and vessels, in spending the period of what they assert to be most difficult and dangerous navigation, below, and leaving their vessel in charge of the pilot and another officer, who, though qualified, may not be sufficiently experienced, is condoned.

We have no desire to convey the impression that the route is without difficulties or dangers, but the many improvements and aids to navigation which have been provided by the Dominion Government during the past few years, have minimized these to a very great extent, and the number of vessels which have been navigating the entire route for years without accident, is sufficient proof that with ordinary care and judgment, the natural concomitants of good seamanship, the navigation of the waterway from the open sea to Montreal is as safe as any other similar channel in the world.

Examination of Water Levels on the St. Lawrence River.

As previously announced in Canadian Railway and Marine World, Prof. E. E. Haskell, Dean of the School of Engineering, Cornell University, Ithica, N.Y.; W. J. Stewart, Chief Geographer of the Naval Service Department, Ottawa; and V. W. Forneret, Superintending Engineer of the St. Lawrence River Ship Channel, have been appointed a board to investigate and report to the Minister of Marine on the whole question of the water levels of the St. Lawrence at and below Montreal.

The Minister's report, on which the order in council appointing the board was passed states that Prof. Haskell is universally regarded as one of the foremost experts on this continent on all questions relating to water levels. He is to be paid $25 a day, in addition to travelling and living expenses, during the time he is actually engaged in Canada as a member of the Board.

The Loss of the Ship Freia.

The enquiry into the loss of the Norwegian ship Freia, at Sunday Point, Yarmouth, N.S., May 30, was enqired into recently by the Dominion Wreck Commissioner, Commander H. St. G. Lindsay, assisted by Capts. Neil Hall and J. W. Harrison as nautical assessors. This vessel, having taken on her cargo of lumber at Yarmouth, was towed outside the harbor and anchored, with two mates and a seaman aboard. It appears to be the practice at this port to anchor vessels outside the harbor after loading and while waiting for a complete crew. Members of the crew were taken on board from time to time, and on May 29 there were 13 on board. Later, heavy seas arose, and the vessel dragged at her anchors, toward the shore. Unsuccessful attempts to cut away the masts and rigging to ease the ship were made, and she struck on the rocks and disappeared in 15 minutes, the crew being successful in getting on to the rocks. The court was of opinion that everything possible was done under the circumstances to save the vessel, and no blame was attributed to anyone, but considered that the custom of the port in sending vessels into the open with no crew aboard and no sails bent, and leaving them exposed for days to bad weather and strong currents with poor holding ground, is open to criticism.

Dangerous Goods in Public Harbors.—An order in council recently passed for regulating the storing of dangerous goods within the limits of any public harbor, when such goods are not intended for shipment on any vessel, provides that no explosive, inflammable or dangerous goods of any kind may be kept on any pier, or in any bulk scow or floating stage in any harbor without the written permission of the harbor master, under penalty of $100 for each offence. The harbor master may decide, subject to appeal to the Department of Marine, what goods are included under these regulations, and may order their removal whenever permission has or has not been granted.

A passenger on the Quebec and Lake St. John Ry., who refused to give up his ticket recently, on the ground that there was not an available seat on the train, and who was subsequently put off, is suing the company for $1,000.

The Absorption of Canada Interlake Line, Limited.

A. E. Ames & Co., brokers, Toronto, issued the following circular to the preferred shareholders of Canada Interlake Line, Ltd., at the end of June:—

"By an agreement dated June 20, which has the approval of the directors of Canada Interlake Line, Ltd., W. Grant Morden, of London, Eng., and J. P. Steedman, of Hamilton, Ont., have agreed to purchase from the shareholders of Canada Interlake Line, Ltd., their holdings of preferred shares, also their holdings of common shares received as a bonus at the time they subscribed for the preferred, if they still retain such common shares, as follows:—

"The purchase price for preferred shares, carrying with them the bonus of 15% of common shares, shall be $107.50 for each preferred share together with accrued dividends thereon to date of payment. Such shareholders as so desire shall have the privilege, instead of taking cash, of exchanging their holdings for the same number of cumulative 7% preferred shares as they now hold, and 25% thereof in common shares of Canada Transportation Lines, Ltd. (the company recently formed to take over the Richelieu and Ontario Navigation Co., Canada Interlake Line, and several other navigation companies).

"The purchase price for preferred shares, in respect of which the bonus of common shares cannot be delivered, or in the purchase of which no bonus of common shares was received, shall be $100 for each preferred share, together with accrued dividends thereon to date of payment. Such shareholders as so desire shall have the privilege, instead of taking cash, of exchanging their holdings for the same number of cumulative 7% preferred shares as they now hold and 10% thereof in common shares of Canada Transportation Lines, Ltd.

"The terms of the agreement further provide:—That shareholders resident in Canada should deposit their stock with the Prudential Trust Co., Toronto, not later than July 10, and those resident outside of Canada not later than July 21. That the stock so deposited shall be held by the Trust Co. in escrow subject to the terms of the agreement and that the Trust Co. will issue a deposit receipt therefor. That the purchase or exchange, as the case may be, shall be completed on or before Aug. 15, and if not then completed the stock shall be returned by the Trust Co.

"While security holders are free to exercise their choice, we are of the opinion that the exchange of securities will work out to their advantage."

Accompanying the foregoing circular was one from M. J. Haney, President, and J. W. Norcross, Managing Director, Canada Interlake Line, Ltd., which said in part:—"The propositions submitted to you for the exchange or sale of your stock have been sent out after being carefully considered and heartily approved by your directors. We have studied the prospects and possibilities of the Canada Transportation Lines, Ltd., and are confident that the net earnings of the new company will make its securities very attractive. We feel warranted in recommending you to accept the stock of the Canada Transportation Lines in exchange for the stock you now hold in this company. Please note that the preferred shares carry a bonus of 10% common stock."

Canadian Notices to Mariners.

The Department of Marine has issued the following:—

194. June 17. New Brunswick, south coast, Bay of Fundy, off Deadman Head, buoy to be established.

195. June 17. Nova Scotia, southwest coast, Barrington Bay, Congress Shoal, can buoy replaced by bell buoy.

196. June 17. Nova Scotia, south coast, Sambro harbor, buoys established.

197. June 17. Quebec, River St. Lawrence, ship channel between Quebec and Montreal, middle ground below St. Antoine, gas buoy placed.

198. June 17. Quebec, Richelieu River, off de Bleury Creek, buoys established.

199. June 17. Quebec, River St. Lawrence below Montreal, Repentigny, temporary front range light.

200. June 17. England, west coast, Milford Haven, East Pennar Point, alteration to color of light on pier.

201. June 18. New Brunswick, Bay of Fundy, west of Whitehead Island, Whitehead Ledge, buoys established.

202. June 1-8. New Brunswick, east coast, Northumberland Strait, Chockfish River, light established.

203. June 18. Quebec, River St. Lawrence above Quebec, Pointe aux Trembles en bas, light established on wharf.

204. June 21. Quebec. Ottawa River, Fort William, pole light discontinued, lighthouse established on Government wharf.

205. June 21. Ontario, Bay of Quinte, approach to Deseronto, buoys established.

206. June 21. Ontario, Detroit River, Livingstone Channel, float light established.

207. June 21. Ontario, Lake Huron, Goderich, temporary light on south breakwater discontinued.

208. June 21. Manitoba, Red River, chart Winnipeg to Lake Winnipeg issued.

209. June 21. Quebec, Montreal harbor, channel to dry dock, buoys established.

210. June 21, Quebec, River St. Lawrence, Montreal harbor, St. Lambert shoal, buoy established.

211. June 25. Nova Scotia, south coast, Liverpool Bay, Coffin Island, lighthouse destroyed by fire, temporary light.

212. June 25. Prince Edward Island, south coast, Hillsborough Bay, wreck.

213. June 25. Prince Edward Island, south coast, Hillsborough Bay, Haszard Point, day marks on range lighthouses.

214. June 25. Prince Edward Island, south coast, Hillsborough Bay, Charlottetown harbor, color of Brighton Beach range lighthouses.

215. June 25. New Brunswick, Chaleur Bay, Caraquet harbor, buoys established.

216. June 26. Quebec, River St. Lawrence, Lake St. Louis, changes in buoyage.

217. June 26. Ontario, Lake Erie, Long Point Bay, wreck marked by buoy.

218. June 26. Ontario, Lake Erie, Pelee Passage, southeast shoal lightship, additional particulars of lights.

219. June 26. Ontario, Lake Superior, Thunder Bay, Fort William, Mission Channel entrance, buoys to be established, range lights to be established.

220. June 30. British Columbia, Vancouver Island, southeast coast, Esquimalt harbor, Extent of Whale Rock, buoy to be changed in position.

221. June 30. United States of America, Washington, Puget Sound, Alki Point light station, characteristic of light changed, fog signal established.

222. July 3. New Brunswick, St. John River, Scotchtown, buoys established.

223. July 3. New Brunswick, east coast, St. Louis Gully, buoy established.

224. July 3. Nova Scotia, south coast, Halifax approach, Chebucto Head, date fog alarm is to be changed to diaphone.

225. July 3. Prince Edward Island, north coast, Cascumpeque harbor, Alberton, change in position of range lights.

226. July 3. Quebec, River St. Lawrence, Les Mechins, pole light on wharf.

227. July 5. Quebec, River St. Lawrence, Lake St. Louis, buoys established southward of Dorval and Pointe Claire lighthouses.

228. July 5. Ontario, River St. Lawrence, Thousand Islands, gas buoy established near northwest extremity of Georgina Island.

229. July 5. Ontario, Lake Ontario, Presqu'ile Bay, change in color of Brighton back range light.

230. July 5. Ontario, Georgian Bay, west side, Lionhead harbor, light pole replaced by tower.

231. July 5. Manitoba, Red River, Selkirk, lights established on wharf.

232. July 5. United States of America, St. Clair River, St. Clair Flats Canal, light established.

233. July 5. United States of America, Lake Superior, Apostle Islands, Outer Island light, characteristic changed, intensity increased.

234. July 7. Quebec, Saguenay River, below Passe Pierre Islets, light established.

235. July 7. Quebec, Saguenay River, Ile St. Louis, light established.

236. July 7. Quebec, Saguenay River, Trinity Bay, light established.

237. July 9. Ontario, Georgian Bay, east side, Waubuno Channel, Gull Rock, day beacon erected.

238. July 9. Ontario, Georgian Bay, east side, approach to Parry Sound, Black Rock, day beacon rebuilt.

239. July 9. Ontario, Georgian Bay, east side, approach to Parry Sound, Twin Rock, day beacon rebuilt.

240. July 9. United States of America, Lake Ontario, east end, Gallow Shoal, change in position of gas buoy.

241. July 9. United States of America, St. Clair River, Marine City Shoal, gas buoy established.

242. July 9. United States of America, St. Clair River, Stag Island, gas buoy established.

243. July 9. United States of America, Lake Huron, Detour Passage, Crab Island Shoal, gas buoy established.

244. July 11. British Columbia, Cardero channel, Greene Point rapids, Griffiths Island, gas lighted beacon established.

245. July 11. British Columbia, Brown Passage, Tree Nob group, Triple Island, gas lighted beacon established.

246. July 12. Nova Scotia, west coast, Yarmouth Sound, middle ground northeastward of Juhns Cove, buoy established.

247. July 12. New Brunswick, east coast, Shippigan Gully, change in position of back range light.

248. July 12. Quebec, River St. Lawrence, eastward of Orleans Island, gas buoys placed temporarily for dredging purposes.

Canadian Railway and Marine World.

September, 1913.

The Canadian Northern Railway Montreal-Port Arthur Line.

By Henry K. Wicksteed, B.A.Sc., M. Can. Soc. C.E., Chief Engineer of Surveys, Mackenzie, Mann & Co., Limited, Toronto.

The Canadian Northern Ry. has been doing some rather remarkable work in filling in the last links of a transcontinental railway system. For over a year it has had under contract nearly 1,000 miles of main line between Montreal and Port Arthur, besides the completion of a branch of 250 miles between Toronto and Ottawa, and the construction of the Montreal tunnel and terminals, this last being the largest and boldest work of the kind which has ever been undertaken in Canada. These works are all on the east end of the railway system, between Lake Superior and the Atlantic, and independent of the line through the Rockies and down the North Thompson and Fraser Rivers to the Pacific, which are not touched upon in this article.

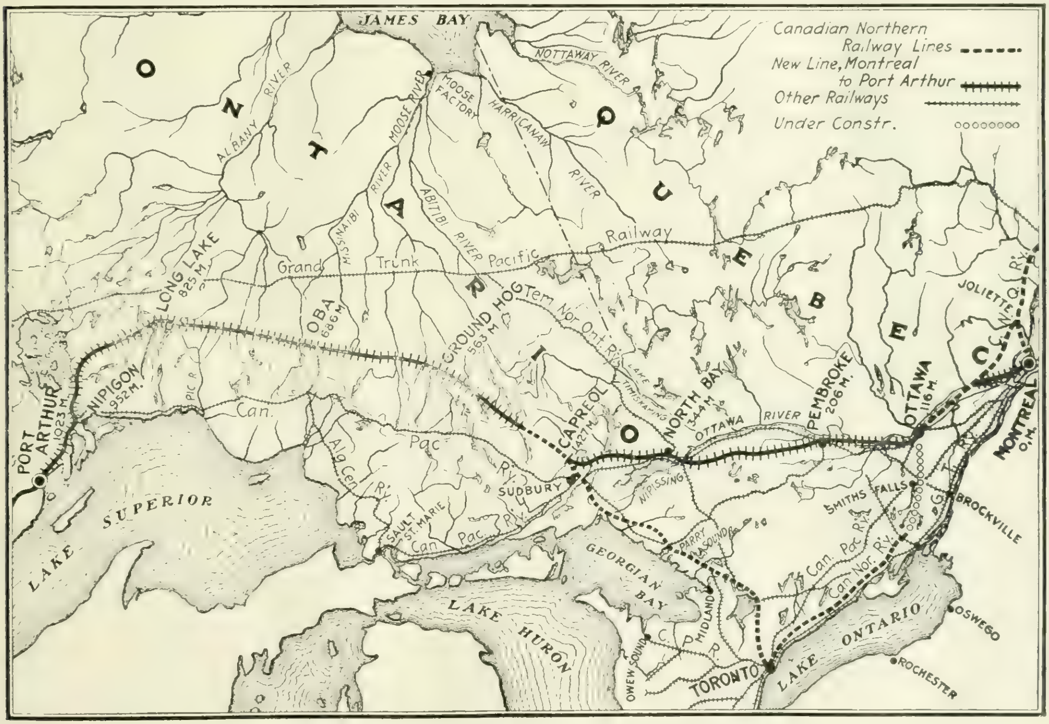


Fig. 1.—Montreal-Port Arthur Section of Canadian Northern Railway's Transcontinental Line.

This important link in the C.N.R. transcontinental system is shown in the map, fig. 1, while a condensed profile is given in fig. 2. This line (1,023 miles) is not only one of the longest stretches of line to be undertaken at one time, but it is also unique in the matter of location among Canadian railways, only the Government National Transcontinental Ry. (now nearing completion) approaching it in the matter of ruling grades. The standard in this particular has been 0.6% against the westbound traffic and 0.4% in the opposite direction. One grade of 10 miles in length is 0.5% (compensated for curvature) against eastbound traffic, but with this single exception the standard has never been exceeded in the whole distance of 1,000 miles, and not even reached except for very short distances.

Owing to the extremely rocky and broken character of much of the country traversed, no attempt has been made to flatten the curvature in the same proportion as the grades. The standard of most Canadian roads is 6°, and this has not been exceeded except in a few isolated cases. The standard obtaining for many hundreds of miles is 4° and less. In another respect the C.N.R. is fully abreast (if not ahead) of the times; that is, the almost total abolition of grade crossings of other railways or of important highways. As a matter of fact, the securing of grade separation at reasonable cost has been a very important consideration (and at several points a governing one) in working out the location.

It will be of interest now to describe the line somewhat in detail.

Montreal to Lake Nipissing.

The Canadian Northern Quebec Ry., an allied corporation, has a terminal in the east end of Montreal and runs thence northeasterly parallel to the St. Lawrence to Quebec and a number of other important points in the province. About 1½ miles from this terminal, is located a sorting yard and a spur connecting with the Montreal Harbor Commissioners' tracks. For economic and topographic reasons this point was chosen as the starting point for the transcontinental line. It runs thence northwest and then west, skirting in a rough semicircle the high plateau at the base of the mountain on which much of the city is built. At 10 miles it passes under the Canadian Pacific Ry.

Half a mile further is the point of connection with the local line which will tunnel directly through Mount Royal (at its highest point) to reach the extensive passenger and freight terminals which have been laid out in the heart of the city, as mentioned above. Two miles beyond, at Cartierville, 600 acres have been reserved for a divisional yard, with repair and erecting shops, and with a margin to be devoted to workmen's dwellings, etc. The Montreal terminal system (with its great tunnel) and the Cartierville yard are shown in fig. 3.

The line now skirts the banks of the Riviere des Prairies, one of the mouths of the Ottawa, for some six miles to mile 20, where it crosses to Isle Jesus and then skirts the east bank to mile 22, where it crosses another channel (the Riviere des Mille Isles) and reaches the mainland near St. Eustache. The line now runs as straight as the topography will allow to Grenville, where it joins the existing line of the C.N.Q.R., and crosses the Ottawa with it on a fine steel bridge, 2,000 ft. long, to Hawkesbury at mile 60. It then skirts the bank of the Ottawa for nearly 50 miles more, passing through L'Orignal and Rockland to Ottawa at mile 116. There are only two important bridges on this section, over the South Nation River and over Greens Creek near the city. Ottawa will be on a branch about a mile long to the existing Central Station.

The main line follows up the Rideau River and crosses it near mile 122. The Toronto branch leaves at this point, which has been called Rideau Jct. The main line swings away again towards the Ottawa and crosses both the C.P.R. and G.T.R. (Parry Sound branch) overhead, and after paralleling the river again for several miles crosses it at mile 154 to the Quebec side. It parallels it again for 22 miles, recrossing into Ontario near mile 176. This is the most important structure so far, necessitating a span of 300 ft. and several smaller ones. At mile 199 it again crosses the C.P.R. overhead, and at mile 206 runs into Pembroke.

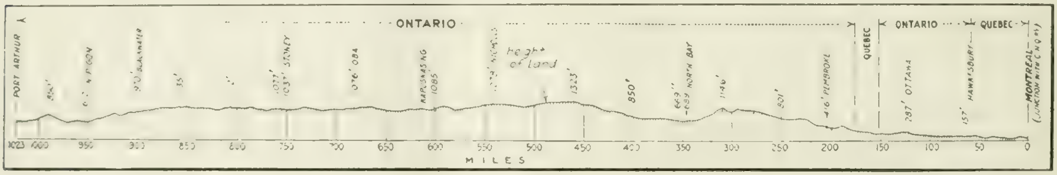


Fig. 2.—Profile of Montreal-Port Arthur Line, Canadian Northern Railway.

So far the line has been in settled country and generally in limestone formation, following one of the great rivers of the continent for practically the entire distance. The securing of light grades has been a comparatively easy matter, but beyond this point the problem is entirely different. The line leaves the Ottawa and ascends the Indian River and almost immediately begins to rise. At mile 225, a divide is crossed which leads t the valley of the South Petawawa (another large tributary of the Ottawa) the line skirting along Grand Lake and some other expansions to mile 253. Another low divide is crossed into the valley of the Little Madawaska, down which the line runs to the main Petawawa. The work is quite moderate, but largely in rocks. The grades, after surmounting the Indian River divide, are almost level.

The Petawawa occupies a very marked depression running for over 100 miles parallel to the Ottawa. At points it narrows to the dimensions of a canyon, and again widens out sufficiently to form lake expansions two miles or more in width. The largest of these is Cedar Lake, 10 miles long. The scenery is very picturesque. The amount of agricultural land being very small, several hundred square miles of this and adjacent valleys have been set aside as a national park and game preserve. The line follows the Petawawa very closely, with heavy rock work and comparatively abrupt ascents in the canyons alternating with easier country and level grades along the lake expansions, to mile 289, where it attains an elevation of 1,100 ft. above sea level.

The rise has been almost constant, and although there are many miles of level there is very little reverse at any point. There is now, however, some four miles of descent to the crossing of the Kioskoqui Lake, an expansion of the Amable du Fond River. This is one of the constructive problems of the road, being 1,200 ft. wide, with 40 ft. of water, over a not very reliable bottom of unknown depth. Eventually there will be a solid earth fill. Another divide, with an elevation of 1,140 ft., occurs at mile 306, after which there is a long descent to Lake Nipissing, at North Bay, where it is 460 ft. lower. About half of this is negotiated on a grade of 0.5%, compensated; the balance is intermittent, and nowhere more than 0.4%. At mile 339, the line again crosses the C.P.R. overhead, and at mile 344 reaches North Bay, the first town since leaving Pembroke.

Lake Nipissing to Port Arthur.

From North Bay the line parallels the C.P.R. along Lake Nipissing to mile 359, then crosses the Sturgeon River at mile 365 and follows its valley and that of one of its branches to mile 397. There it crosses another low divide into the valley of the Wahnapitei, and crossing this it skirts the south shore of the lake. At mile 427 it runs into the existing line from Toronto northward, which has been in operation for some years. This point has been named Capreol Jct.

The combined line now runs up the Vermilion valley through a country which has been proved to contain large mineral wealth. At Moose Mountain, hematite iron is being mined in considerable quantities; nickel, copper and some silver have been turned out at other points. There is also a good deal of timber being taken out at various points. The valley itself is somewhat remarkable. It cuts almost at right angles to the general strike of the country and leads up to an unusually low height of land between Lake Huron and Hudson Bay, 1,350 ft. above the sea, at an average grade of only 10 ft. per mile. This divide is so flat as to be imperceptible to the eye, and at its highest point is a spring pond in a local depression.

For 250 miles the line has been running through a country almost useless from an agricultural point of view. Where it has not been rock, it has been dry sand and gravel, but on the northern slope of the continent it begins to improve, and some of the valleys show good land and are well timbered. At mile 563, the line crosses the Ground Hog, the first of the large rivers which unite further north to form the Moose River. The country is much better and shows considerable areas of clay loam. At mile 577, the Apishkanagama (another large tributary) is crossed, and at mile 610 the Kapuskasing Lake. This again is a very attractive country, which continues across the Missinaibi at mile 632. Although the immediate surface is undulating, the general level is uniform.

At Oba, mile 686, there is one of the topographical freaks which are so common on this great plateau. A considerable stream, the Oba River, forks abruptly; part of it crosses the line and runs north into the Missinaibi, the balance turning abruptly south and after a circuitous course crossing the line at mile 696 as part of the Kabinakagami, which eventually empties into the Albany River many miles north of the Moose River. At mile 712 is another large stream, the Morrison or Shekak (hitherto not laid down on the maps), noted for the size, number and voracity of its trout. Still another large stream feeding the Albany system is the Obakamiga, at mile 740.

From this point westward the line runs into some rough Laurentian country again to mile 800, when it again emerges on to the great northern plain near Mackays Lake. It has crossed the height of land in the meantime, and crosses back again near mile 810. At mile 825 it crosses the outlet of Long Lake, known as the Kenogami River, which also swells the Albany. The lake is an extraordinary sheet of water 55 miles long, extending south to within 30 miles of Lake Superior. It formed one of the problems which the early C.P.R. survey encountered, and forced the line down to the immediate shore of Lake Superior. The effort to find some way round it or across it delayed the C.N.R. surveys over a year. At the south end it is a deep valley between high granite ridges, and the country on either side is almost inconceivably rough. At the north end, on the contrary, is a flat country in every direction, except south, and considerable areas of good land abut against it.

The Hudson's Bay Co. has had a trading post here for half a century or more, and within the last few years the French company, as it is called (Revillon Freres), has established another. Four long travelled canoe routes meet here. One from the south by the lake itself and a chain of lakes and rivers connecting it with Lake Superior near Jackfish Bay. Another starting from Lake Superior by the Pic River and Mackays Lake; a third comes in from Lake Nipigon to the west, and still another follows the Kenogami River to the Albany. This point is therefore a natural gathering place for the Indians of the country and an emporium for the fur trade. The line follows approximately the third of these routes, skirting the north shore of Little Long Lake and Wild Goose Lake.

At mile 854 it crosses the height of land for the fourth time and enters the basin of Lake Nipigon. Crossing the

Sturgeon River at mile [illegible], the line makes for the valley of a parallel stream, the Blackwater, which it follows to mile [illegible]. Leaving the Blackwater about five miles above its mouth, the line turns abruptly south, and at mile [illegible] comes out on the immediate shore of Lake Nipigon at Sand Point. For the next [illegible] miles the work is generally heavy and on side hill. The line follows the bold shore of Orient Bay, and from its head follows a narrow valley between lofty trap mountains, partially filled in with glacial drift, here forming the outlet of the lake. At mile [illegible] is the only tunnel since leaving Montreal, [illegible] ft. in length through a bold trap bluff.

[illegible] ft. to the dividing ridge between it and Thunder Bay. Immediately after crossing this divide is the heaviest piece of permanent trestle on the line, the crossing of [illegible] River at mile [illegible], being [illegible] ft. long and [illegible] ft. maximum height. From this point into Port Arthur, at mile 1,023, there is a long descent on fairly easy ground to within two miles of the city, whence it is being arranged to use the C.P.R. line to a junction with the C.N.R. line already in operation from Port Arthur westward.

Exploration and Surveys.

The surveys for this long stretch of line (1,023 miles) have extended over eight years, although most of the work (and that the most difficult of access) was completed in the past four years. From Montreal to Sudbury the country was fairly well mapped and had been worked over by lumbermen. Supplies [illegible] Capreol Jct. to Lake Nipigon, on the contrary, was almost a terra incognita. A half dozen of the main canoe routes had been traversed by the Geological Survey and laid down on the maps. ther information was misleading and generally worse than useless. One whole summer and parts of other summers were spent in mere exploratory work, and rough [illegible]

[illegible] succession of lakes and rivers, [illegible]

[illegible]

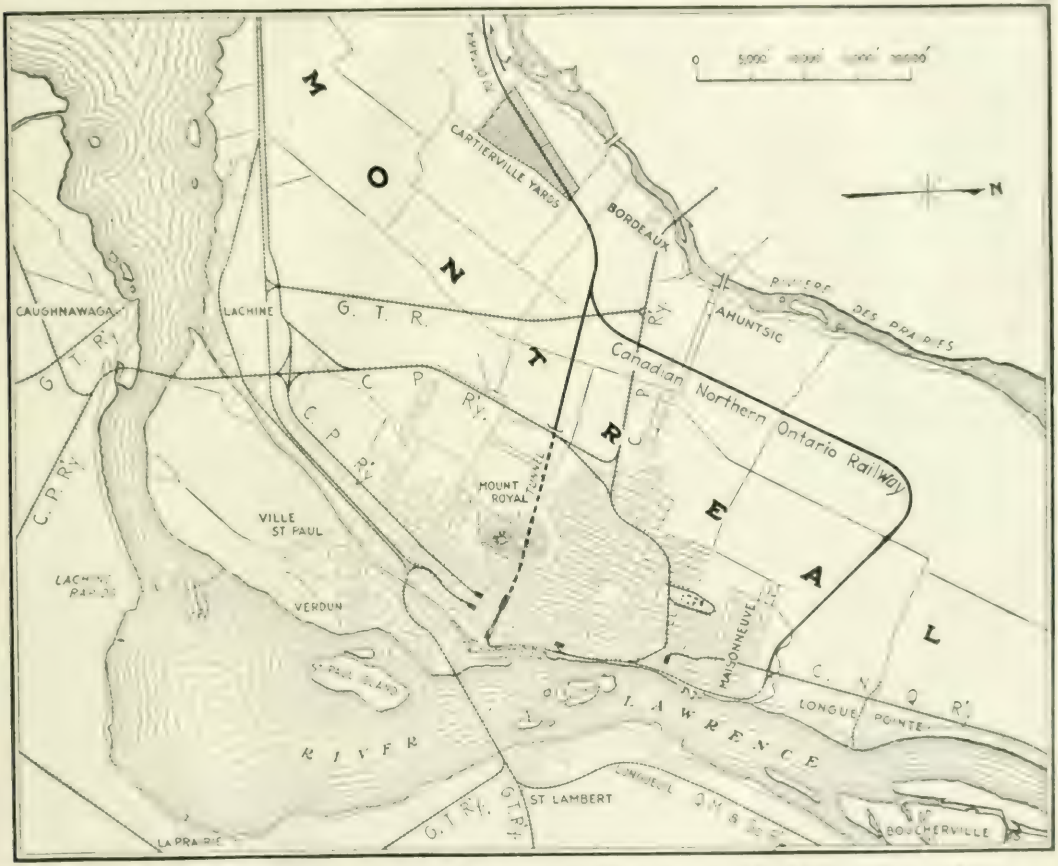


Fig. 3—Canadian Northern Railway Terminal Lines in Montreal, with Tunnel under Mount Royal to Central Passenger Station.

The Nipigon is crossed at mile 945 and the line then follows its west bank to its mouth, crossing the C.P.R. underneath for the last time at mile 952. Just below the mouth of the river on Nipigon Bay is a piece of construction which has given some trouble and anxiety to both the C.P.R. and the C.N.R. in passing round a huge bluff 600 ft. high fronting on Nipigon Bay. The older road has the "inside" track and is partly in cut. The new line is [illegible] and the slopes have run out into 100 ft. of water and mud. This bluff rounded, the line leaves the bay and strikes across the head of Black Bay on very easy ground.

From Black Bay there is a long rise of

[illegible] signed two full parties, averaging from 13 to 17 men each. One of these parties ran traverses and rough exploratory lines ahead of the other and kept from 15 to 25 miles in advance of it. The other followed with trial lines and location.

[illegible] knowledge of the country ahead, sufficient to prevent running into a cul-de-sac [illegible] under the control of the division engineer. The plan worked on the whole remarkably well, largely on account of the personal ability and experience of the two divisional chiefs, H. T. Morrison and J. F. Rose.

The parties worked winter and summer, enough supplies being brought in during the late summer by the water routes to convenient points, at which caches were made, and from these they were distributed as required by dog teams to the various camps. These caches were placed as far as possible ahead of the work, rather than behind. The moral effect upon the spirits of the men, owing to the feeling of security thus engendered, was of marked value. As a matter of fact, there was no real privation at any time through shortage of food, practically no sickness, and very little accident. Some men mutinied at one point, tried to find their way out alone and got frostbitten and half starved; two others were drowned, but in neither case was anyone but themselves to blame. One died from the effects of alcoholic poisoning on his way in. One engineer came out of the woods to die of a disease contracted years before. These represent all the casualties.

On the other hand, the standard of comfort was maintained to practically the same level as on similar work nearer home. The tents were roomy and well heated, and the food was the best which could be obtained. A special mail carrier was attached to each division and made regular trips (by canoe in summer and on snowshoes in winter) over the 75 to 150 mile gap which separated the parties from the C.P.R. Fresh meat was often obtainable and fish almost always, except in midwinter.

One remarkable exception to the general standard of comfort was on an expedition organized by the western divisional engineer through an exceptionally inaccessible belt of country, which it was urgently desired to finish before the spring breakup. Mr. Rose discarded all his white staff except those absolutely necessary for the instrumental work and retained 17 Indians of the country. Tents were abandoned in favor of enough canvas to cover the wigwam. Heating and cooking were done on an open fire in the centre. All the camp impedimenta and provisions were carried on the backs of the men at one trip. It is sufficient to say that in spite of temperatures lower than 50° below zero, the party emerged from the woods three months later in the best of health and spirits and with the work satisfactorily finished.

In one respect the survey parties in this north land had a great advantage over the Antarctic explorers about which so much has been heard lately. Fuel and shelter from the wind were always within reach. On the other hand the light fleecy snow of the north land is incomparably more difficult to travel on than the wind swept wastes of the South Pole. And one is led to wonder whether the British sailor is after all the right man to carry through successfully such expeditions as that of Capt. Scott, and whether the north country Indian or Esquimaux, under competent leadership, is not the proper person.

The half breed runner has been known to make 100 miles in 24 hours on snowshoes. The writer had made 70 miles, and 40 to 50 miles was an ordinary day's work a generation ago. But these men were brought up to it from childhood. No man, however strong, could hope to keep pace with them unless after years of practice. They travelled with the simplest and lightest of outfit; a rabbit skin blanket, a sheet of cotton to keep off the wind at night, a copper teakettle, a tomahawk and a frying pan. This was the outfit, and it was such men as these who accompanied Dr. Rae to the Arctic and men of a kindred race who went north with Peary to the Pole. Nansen made one of the most remarkable journeys in history, in comparative comfort, because he had studied their methods and modes of life during years of residence among them. There are still waste places on the earth to be explored and mapped, and the explorers will do well to attempt merely to improve the methods which have enabled the natives to live and thrive under the local conditions, not to revolutionize them.

Equipment and Camp Outfit.

The outfit of these survey parties was an interesting study in itself. The principal consideration, of course, was transportation. The northern wilderness is for the most part a hopeless jungle of growing and fallen timber, with precipitous rocks, swamps or muskegs, and lakes and rivers intersecting it in every direction. Continuous travel on foot is difficult and exhausting, and the use of pack animals impracticable. But the numerous lakes, ponds and streams afford good (though broken) navigation, and the universal means of travel in summer is the canoe. At first this was the birch bark canoe of the native Indian, a wonderful construction built entirely of the products of the local forest, but extremely delicate and unfit for use by any but practised white men.

Next came the basswood or cedar canoe, built roughly on the Indian models. It was much stronger and more speedy, but also heavier, and weight is a very serious matter on the portages. A still later arrival, and one coming into general use, is the canvas canoe. I believe this came originally from Maine, and it is now brought to considerable perfection. The construction, except for the canvas skin, is very like that of the Indian; but the white man's tools and metal fastenings give him a great advantage over the native, and wonderful as the Indian's work is, considering his facilities, the civilized product is better. The canoes for the C.N.R. surveys were built by the Chestnut Co., in Fredericton, N.B., but its models were rejected in favor of that of the aboriginal craft, and both models and construction were a decided advance on anything previously used.

Tents were also experimented with, and a number of different styles were tried. Here again lightness was essential. The final evolution was a roof of best 8 oz. duck, with back, front and walls of light drill. Shelter being almost always available and windage unimportant, the walls were made unusually high (5 to 6 ft.), adding much to available room inside.

Bedding for summer consisted of the inevitable woolen blankets, but in winter the extremely low temperatures render these insufficient for the ordinary man, even when made into a sleeping bag. The rabbit skin blanket is the most perfect substitute which the red man or anyone else had evolved up to a few years ago, but latterly the eiderdown quilt has superseded everything else. This, made into a sleeping bag, with a protective covering of duck, has been a very satisfactory solution of the bedding question. A well fed man can sleep comfortably in a snowbank in one of these bags with the thermomenter at 30° below zero.

Transport in winter is accomplished over practically the same routes as in summer, the ice on the lakes and rivers forming the road. The toboggan takes the place of the canoe. Experiments have been tried with broad runner sleighs similar to the kometic of the Esquimaux, and under certain circumstances they are admirable. But they need a broad, open road and a fairly hard one, and this they only get on the larger lakes. The portages are too narrow and generally too soft, and the flat narrow flexible toboggan is the only thing which is universal in its adaptation. It is generally made of the native birch, and is another Indian creation which has been little improved on by the white man, although steel screws, tire bolts, and even steel wire ropes have of late entered into its construction to replace the lashings of rawhide.

The hard wood gives a minimum of friction in cold weather, but towards the breakup of winter the wet snow not only makes them difficult to haul but roughens and rags up the wood. Low wooden runners, shod with steel, are then sometimes used as an adjunct, but they are awkward things to carry about during the long winter and the period of wet snow is so short that they are often omitted. Dogs are used for long distance work and rapid travelling.

The most important part of the winter outfit is probably the snowshoe, and it has been one of the hardest to get of serviceable make. The snowshoe the Indian makes for himself is good, but those he makes to sell are the reverse, and those sold by the dealers in civilization are almost useless. The Fredericton firm has taken up this branch of manufacture of late, and is supplying a very good article.

Cooking outfits have also been the subject of much study and experiment. For light flying expeditions, the open fire is all sufficient, but for a large party requiring a variety of food it is difficult in these days to find a cook who is willing to operate on one. In stormy weather his job is not an enviable one, the baking of bread especially being very difficult. Further, the open fire necessitates a very large quantity of dry wood, which is only obtainable anywhere by virtue of much chopping and hauling and sometimes not at all. In any case it takes a helper's whole time to keep the cook supplied. Sheet steel cook stoves have been brought to a fair state of efficiency, but they are still cumbersome and heavy.

Instruments.

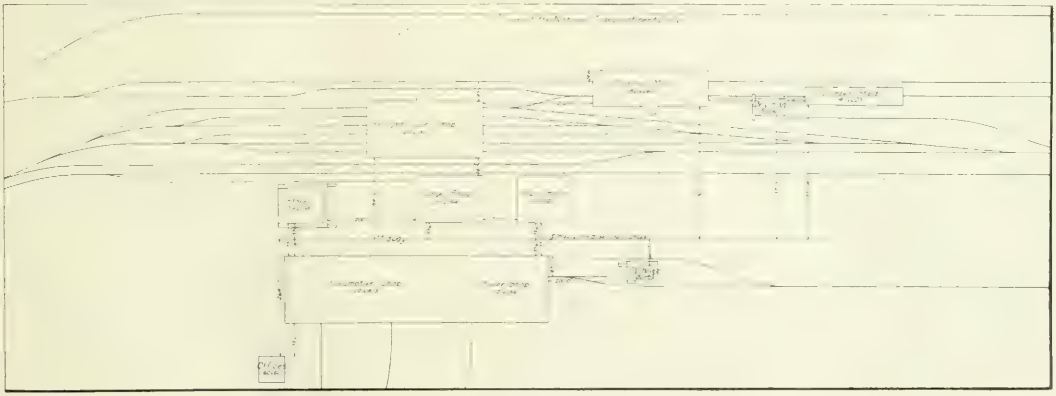
The surveying instruments would seem to be the most important of all, but as a matter of fact they caused little worry and few accidents occurred. American patterns were used almost exclusively, and the simplest and lightest were preferred. One of the worst faults with the smaller instruments was the small diameter of the milled head of the leveling and clamp screws, necessitating the removal of the mitten for every adjustment. Stadia wires or a gradienter attachment for the measurement of distances were essential, in fact much of the exploratory work was carried on by micrometer work. A vertical arc on the other hand was worse than useless, merely so much more weight to be carried.

The dumpy level was the favorite on account of the greater need for ample light than for great magnifying power. For one reason or another long sights in thick woods are seldom possible in any case, and in midwinter in these latitudes the day is only eight hours long and it is important to use the last vestige of daylight. A pole rod, self reading, with figures painted on the wood was used almost invariably. The telescope rods were apt to play tricks, slipping down unnoticed at times and refusing to extend when required.

Repairs were difficult to make, and as a matter of fact this question of repairs with the elementary tools which could be carried (the axe, spokeshave, auger and awl) was one that entered into consideration with almost every article of the equipment.—Engineering News.

National Transcontinental Railway Shops at Quebec.

The plans for the shops to be built by the National Transcontinental Ry. at Quebec, Que., estimated to cost $1,500,000, have recently been prepared and tenders will shortly be invited for the work. They are intended to handle all the repairs on the eastern end of the N.T.R. in conjunction with the larger shops at Transcona, Man., 5 miles east of Winnipeg, the major portion of which has been in operation for some time. A description of the latter, dealing with each of the locomotive department buildings in detail, appeared in Canadian Railway and Marine World for Feb., 1912. These two shops will handle the whole 1,800 miles of the N.T.R. from Moncton to Winnipeg, and in addition, it is the intention to handle the repairs on the G.T.P.R. lines west of Winnipeg, until such time as it becomes necessary for that line to build additional shops further west, as the C.P.R. has recently done at Calgary.



Layout of Shop Buildings at Quebec National Transcontinental Railway.

The shops at Quebec will be located in the suburb of St. Malo, which is about 2 miles distant from the centre of the city and almost due west. From the north end of the Quebec bridge, now under construction for the N.T.R., the line follows a northwesterly direction along the St. Lawrence River to Wolfe's Cove, piercing the escarpment at this point, the tunnel running straight back from the river, coming out near the site of the projected shops at St. Malo. The C.P.R. Quebec-Montreal branch passes through St. Malo, and the N.T.R. line from near the point where it leaves the tunnel, forms a Y in two directions to make connection with the C.P.R. The shops will be located on the southerly of the Y branches, in the track engirdled area, the shop area being about 1½ miles long by ¾ mile wide, the main line running along one side.

The arrangement of the buildings is shown in the accompanying plan, from which it will be noted that the layout, while providing for ample accommodation for meeting all requirements for many years to come, is considerably smaller than that at Transcona, but the layout and grouping is such that additions to present buildings, and additional buildings, may be made at any time without destroying the utility of the present arrangement.

The shop buildings will be arranged along a midway, which will parallel the main line, the relation of the buildings to the midway being somewhat different from that in the generally accepted midway shop arrangement in which the shops are placed end on the midway, with each of the buildings close together, with room for expansion to the rear. In this layout the arrangement is different, involving the location of the buildings which use the heavier materials along the midway, with the other buildings back from it. It is considered that this arrangement will prove most satisfactory for a small shop such as this, because the material brought to the shop by the midway crane and placed at one of the several doors of the building, will be taken from the door to the machines in the most direct way. In this respect, it will do away with the "long haul" in the shop. The midway, which will extend the full length of the main part of the shop grounds, will be 75 ft. wide, and served by a 20 ton travelling crane, the track for which will be supported on building abutments and steel columns.

The level of the ground on which the shops will stand is to be raised slightly by spreading over the surface the material removed from the tunnel under the mountain. Most of the buildings in the group will be of practically the same construction, a self supporting steel frame with white brick superstructure walls, the whole supported on a concrete wall carried up to the window sills. The roof of each building will be of double wood sheathing, with ventilators and skylight, and covered with a prepared roofing. The flooring in all cases, save where specially excepted, will be of 6 in. concrete overlaid with a 1½ in. layer of special grease resisting mastic asphalt. The heating of all but the locomotive and boiler shop will be by direct radiation, the locomotive and boiler shop having an indirect fan system.

THE LOCOMOTIVE AND BOILER Shop Building will be 603 by 152 ft., containing both locomotive and boiler departments in opposite ends, there being no divisional walls in the length of the building. The building will be divided into three bays, extending the length of the shop, and divided into 26 traverse bays at 23 ft. centres. Of these traverse bays, 18 will contain locomotive pits, leaving 8 traverse bays for the boiler shop. The longitudinal bays will be as follows:—Erecting bay, 75 ft. wide; large machine bay, 55 ft.; and small machine bay, 18½ ft. Over the small machine tool bay there will be a gallery extending the length of the shop, containing the lighter equipment and heating plants. The locomotive shop space will give an area of 3,400 sq. ft. of floor area per pit, which is slightly smaller than that of the Transcona shops. These shops being smaller will probably not average as heavy repairs as the western shops near the centre of the combined system. The floor area per pit when compared with many other shops, shows that there is ample provision for future needs, and the shop will not soon become encumbered with material and locomotive parts.

The relation of the locomotive and boiler shop building to the midway will be rather unusual, being located with the long side to the midway instead of the usual end on arrangement. This layout is the result of careful consideration, which counselled this arrangement in order that all parts of the shop would be convenient to the midway, for the crane in the latter to bring parts from the stores and other buildings into the shop without disturbing the interior working of the shop as frequently occurs when material must be handled the full shop length. The material can be taken in through doors located at intervals along the midway side. Along the other side of the shop there will be two entry doors to the locomotive shop, and one to the boiler shop, for the entry of locomotives and tenders. In the erecting bay of the locomotive shop there is to be a 120 ton travelling crane for placing the locomotives on their respective pits. There will be in addition, two 10 ton cranes. The boiler shop will have a 20 ton crane, as well as additional smaller cranes not decided on as yet.

THE SHOP OFFICES will be located in a three story and basement building 60 ft. square, near the end of the locomotive shop, and back from it. All the shop officials will be located in this one building, dispensing with minor shop offices. This building will differ slightly from the others, but will be similar in the main, of brick construction on concrete foundations.

THE STORES BUILDING will be of reinforced concrete throughout, 104 by 79 ft., flush with the midway, and with a 10 ft. platform extending around three sides, with ramps leading up from the ground level on the platform at two of the corners. It will also contain a basement. The platform on the midway side will be served by a 20 ton midway crane, facilitating the delivery of stores to and from the different units of the plant.

THE FORGE SHOP is a building 155 by 107 ft., of the typical construction, except that the flooring is to be cinder instead of dressed concrete, as is usual in forge shop practice. It will contain the usual complement of forges, hammers, etc. The steel work of the roof is designed to support the jib cranes.

THE POWER HOUSE will be 125 by 107 ft., divided by a fire wall into engine and boiler rooms, with a pump pit running along this fire wall in the engine room, and a basement extending under the whole area of the boiler room to accommodate the coal and ash handling apparatus, a construction closely approximating that at Transcona in most particulars. The power house will be close to the midway, and quite centrally located with regard to all the buildings of the plant, minimizing electrical transmission losses, and supplying dry steam for the hammers. The engine room will be served by a light travelling hand crane.

THE OIL HOUSE will be a reinforced concrete main floor and basement building at the rear end of the plant. The oil house itself will be 30 by 40 ft., standing on a platform 50 by 70 ft., which will form the roof of the basement. The usual oil house stores will be kept upstairs, with the oil tanks for the plant located in the basement.

THE FREIGHT CAR SHOP, 265 by 130 ft., will be the principal of the car department buildings. In common with the other purely car department buildings, it will be located back from the midway, with the buildings used in common with the locomotive department, such as forge shop and power house, centrally located between. It will be divided into three bays, two of which will be served by cranes. There will be six through repair tracks, with rip track accommodation at each end, where future extensions may be made.

THE PLANING MILL, 82 by 265 ft., will be conveniently located to the rear of the freight car shop. It will be but a short distance across from the power house, to which the mill shavings will be forced under a fan system.

THE DRY KILN, to the rear of the planing mill, will be 38 by 71 ft., of the usual construction.

THE LUMBER SHED, 40 by 225 ft., will be of wooden frame construction on concrete foundations. It will be noticed in connection with the four buildings of the car department that they are so arranged as to give a continuous forward movement of the lumber from the lumber shed, through the dry kiln and planing mill to the freight car shop. The latter is also to be used as a passenger car shop. There will thus be no retrograde movements of the material in passing through the plant.

The whole layout of the Quebec shops, as well as the detail design of the individual buildings, have been prepared under the supervision of W. J. Press, Mechanical Engineer, N.T.R., to whom we are indebted for the data for this article.

Birthdays of Transportation Men in September.

Many happy returns of the day to:—

G. W. Alexander, Local Treasurer, G.T.R. Western Lines, Detroit, Mich., born at Lightcliff, Yorks., Eng., Sept. 10, 1859.

H. Bailey, Bridge and Building Master, Dominion Atlantic Ry., Yarmouth, N.S., born at Huntsville, Ont., Sept. 2, 1879.

W. B. Bamford, Division Freight Agent, Atlantic Division, C.P.R., St. John, N.B., born at Belleville, Ont., Sept. 10, 1863.

G. T. Bell, Passenger Traffic Manager, G.T.R. and G.T.P.R., Montreal, born there, Sept. 7, 1861.

W. H. Biggar, K.C., General Counsel, G.T.R. and G.T.P.R., Montreal, born at the Carrying Place, near Trenton, Ont., Sept. 19, 1852.

E. R. Bremner, ex-Division Freight Agent, G.T.R., Ottawa Division, Ottawa, born at Toronto, Sept. 9, 1875.

M. H. Brown, Division Freight Agent, Ontario Division, C.P.R., Toronto, born at Victoria Square, Ont., Sept. 2, 1866.

W. B. Bulling, ex-Assistant Freight Traffic Manager, C.P.R. Eastern Lines, Montreal, born there, Sept. 16, 1858.

C. F. Burns, Auditor of Disbursements, Intercolonial Ry., Moncton, N.B., born at Clements Port, N.S., Sept. 10, 1854.

A. D. Cartwright, Secretary, Board of Railway Commissioners, Ottawa, born at Kingston, Ont., Sept. 20, 1864.

A. W. Davis, Locomotive Foreman, G.T.R., Stratford, Ont., born at Sittingbourne, Kent, Eng., Sept. 5, 1854.

A. S. Dawson, M. Can. Soc. C.E., Chief Engineer, Department of Natural Resources, C.P.R., Calgary, Alta., born at Pictou, N.S., Sept. 6, 1871.

O. L. Dickeson, President, White Pass and Yukon Route, Vancouver, B.C., born at Ottumwa, Ia., Sept. 16, 1877.

M. B. Dube, General Foreman, Transcona Shops, G.T. Pacific Ry., Transcona, Man., born at Quebec, Que., Sept. 6, 1877.

W. E. Duperow, General Agent, Passenger Department, Grand Trunk Pacific Ry., Vancouver, B.C., born at Stratford, Ont., Sept. 4, 1872.

W. H. Estano, Traffic Auditor, Intercolonial Ry., Moncton, N.B., born at Halifax, N.S., Sept. 29, 1874.

C. B. Foster, Assistant Passenger Traffic Manager, Eastern Lines, C.P.R., Montreal, born at Kingston, N.B., Sept. 30, 1871.

J. P. Ferguson, representing Galena Signal Oil Co., Ottawa, Ont., born at Drummondville, Que., Sept. 12, 1856.

John Gray, General Agent, G.T.R., Toronto, born at River Beaudette, Que., Sept. 28, 1863.

D. W. Hatch, Travelling Agent, Atchison, Topeka and Sante Fe Ry., Montreal, born at Bedford, Que., Sept. 1, 1841.

W. R. Howard, Chief Despatcher and Trainmaster, District 1, Atlantic Division C.P.R., Brownville Jct., Me., born at St. Andrews, N.B., Sept. 14, 1871.

J. E. Hutcheson, General Manager, Montreal Tramways Co., Montreal, born at Brockville, Ont., Sept. 15, 1858.

C. B. King, Manager, London St. Ry., London, Ont., born at Galena, Ind., Sept. 12, 1871.

E. L. Landorph, Resident Engineer, C.P.R., Brandon, Man., born at Copenhagen, Denmark, Sept. 9, 1888.

R. E. Larmour, Division Freight Agent, British Columbia Division, C.P.R., Vancouver, born at Brantford, Ont., Sept. 26, 1868.

H. D. Lumsden, M. Can. Soc. C.E., engineering department, C.P.R., Toronto, born at Belhaire, Scotland, Sept. 7, 1844.

F. J. Mahon, Superintendent Telegraphs, Eastern Division, C.P.R., Montreal, born there, Sept. 18, 1865.

R. E. Merkley, Trainmaster, District 3, Saskatchewan Division, C.P.R., Saskatoon, born at Ottawa, Sept. 3, 1882.

J. F. Mundle, City Freight Agent, C.P.R., Montreal, born at Prescott, Ont., Sept. 20, 1857.

M. B. Murphy, Superintendent, District 2, Central Division, Canadian Northern Ry., Winnipeg, born at Napa, Cal., Sept. 11, 1866.

B. S. Murray, Route Agent, Canadian Express Co., London, Ont., born at Glenwood, N.Y., Sept. 17, 1856.

J. Paul, District Freight Agent, Canadian Northern Ry., Winnipeg, born in Euphrasia tp., Grey Co., Ont., Sept. 13, 1858.

W. J. Pickrell, Master Mechanic, District 3, Ontario Division, C.P.R., Toronto, born at London, Ont., Sept. 15, 1880.

C. S. Richardson, District Freight Agent, C.P.R., Buffalo, N.Y., born at New York City, Sept. 26, 1870.

W. D. Robb, Superintendent of Motive Power, G.T.R., Montreal, born at Longueuil, Que., Sept. 21, 1857.

W. H. Rosevear, ex-General Car Accountant, G.T.R., Montreal, born at Wadebridge, Cornwall, Eng., Sept. 26, 1837.

F. W. Sterling, Travelling Freight Agent, C.P.R., Vancouver, B.C., born at Thornbury, Ont., Sept. 14, 1881.

E. W. Taylor, General Freight Agent, Reid Newfoundland Co., St. John's Nfld., born at Carbonear, Nfld., Sept. 8, 1870.

Sir William Whyte, Director, C.P.R., Winnipeg, born at Charleston, Scotland, Sept. 15, 1843.

H. A. Young, Traffic Manager, Canadian Lake Line, Toronto, born at Brooklyn, N.Y., Sept 1, 1864.

The Dunsmuir Colliery Litigation.—It is understood that both Mackenzie, Mann & Co., Ltd., and James Dunsmuir will appeal against the decision given by the British Columbia Court of Appeals in the cross actions arising out of the sale by the latter of the colliery properties and effects of the Dunsmuir estate on Vancouver Island. The court found that Mackenzie, Mann & Co. were entitled to receive from the vendor all the seagoing vessels engaged in transporting the coal, except the ship Oregon; the stock fuel at the C.P.R. bunkers at Vancouver, B.C., and other collateral properties, and that the vendor is entitled to all the earnings of the properties up to the payment of the purchase money, and not up to the date of the option, as claimed by the purchasers.

In the operation of steam railways throughout the Dominion, during June, there were 24 fatal and 89 non fatal accidents. Of the fatalities, 7 were due to being run over by trains; 4 each to being crushed between cars, to falling from trains, and to being struck by falling material; 3 to being struck by trains, and one each to a derailment and to being crushed by an elevator.

North Toronto Grade Separation, Canadian Pacific Railway.

The C.P.R. is carrying out the grade separation work on its line across the northern part of Toronto, in compliance with the Board of Railway Commissioners order, which called for the elevation of its tracks as well as those of the Canadian Northern Ontario Ry. line, which is projected to enter Toronto from the west along a route following that of the C.P.R. most of the way through that portion of the city. This order called for the elevation of all through tracks from Dufferin St. on the west to Summerhill Ave. on the east, with subways for the majority of the streets crossed. The constructional work is being conducted by the C.P.R., the C.N.O.R. and the city sharing equally in the cost with the C.P.R.

The C.P.R.'s North Toronto line was formerly owned by the Ontario and Quebec Ry., which was absorbed by the C.P.R. in the 'eighties. Originally, this was the only entrance the C.P.R. had to Toronto, but some years ago a diversion was made from Leaside Jct., about two miles east of the centre of the city, to the line across the city waterfront, and thence into the Union Station. This, in conjunction with the C.P.R.'s Toronto, Grey and Bruce line, sidetracked the North Toronto line, the trains entering the Union Station from the east by way of Leaside Jct., and from the west by way of West Toronto. The North Toronto line was afterwards used for freight purposes, a noncongested cut off for through freight being thereby obtained. As the C.N.O.R.'s new line will also enter the north end of the city, the possibility of considerable traffic being handled across the double line made it appear advisable in the Board's opinion to elevate the tracks through the central portion of the line, work on which is now under way.

The viaduct is to be built for 5 tracks, and will be about 3 miles long, covering the more congested portion of the route. Of these five tracks, the northerly one will be used as a service track by the C.N.O.R., as that line connects at both ends with the C.P.R. route from the north. The southerly one will be for C.P.R. service. Of the three central tracks, the two northerly are to be built at present, and will be used jointly for through service. The fifth track will not be built at present, but provision is made for laying it as occasion may require.

To date, only one subway has been built, that at Avenue Road, which is shown in the accompanying illustration. The others will be proceeded with as ordered, the headway clearance of all but this completed subway being as yet under consideration, the city demanding greater head room than the railways feel prepared to give. The Avenue Road subway is 66 ft. wide, with a roadway clearance of 14 ft. It is of a concrete substructure construction, with the former street level depressed about 5 ft. Macpherson Ave. enters the subway from the west on the north of the tracks, requiring a slight street diversion, with retaining wall along that side. All street approaches are on a 5% grade. The subway is crossed on steel plate girders. Work on this subway was carried forward without interruption to train service by leaving one track at grade and building the concrete abutments on both sides of this track, finally carrying the service across on a trestle bridge at the new elevation, and building in the open space in the abutments. The street traffic was diverted to the east on the Marlborough Ave. side.

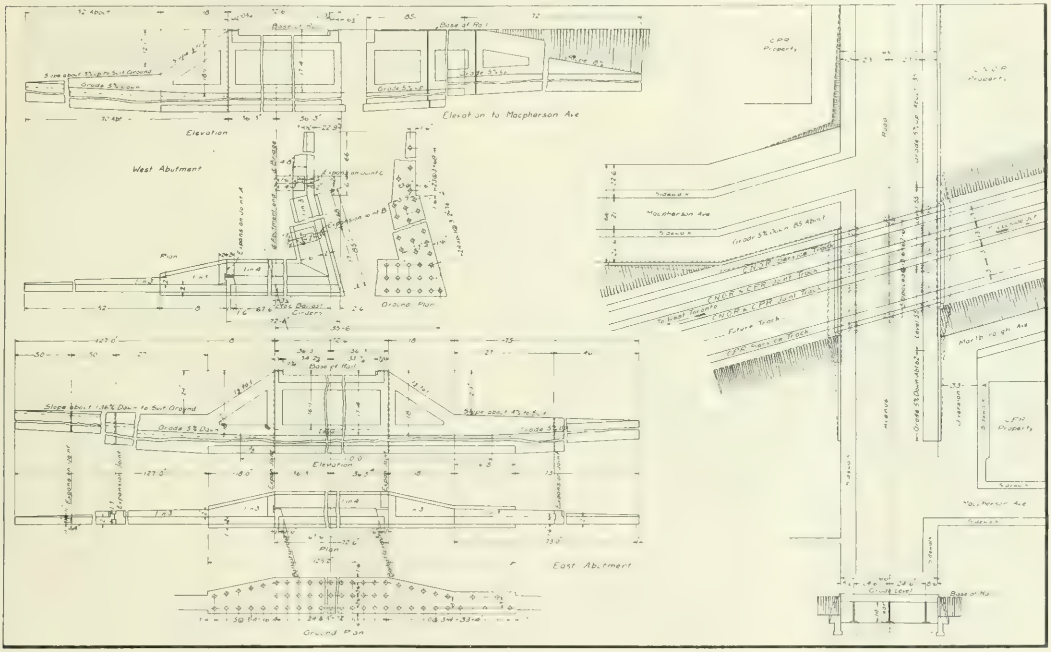
The elevation work between subways has been carried forward in a similar manner, leaving the southerly track open at grade, building a trestle on the north side, on which traffic was diverted. The portion that has so far been elevated is the section from Summerhill Ave. to near Davenport Road, including Yonge St. crossing, which is now being carried on a temporary timber trestle, pending a settlement in the clearance dispute. The two northerly tracks are completed, and the others are being pushed forward. On this section, the elevation is about 12 ft. above the former grade.

It is expected that the new Union Station for the C.P.R. and C.N.O.R. will be in this portion of the line, on the east side of Yonge St., but no definite decision has been announced.

The next subway to be built will be at Davenport Road, where two streets—Davenport Road and Poplar Plains Road—will be carried under the tracks in one subway, by forming a T entrance from the north, the two streets uniting at the tracks.

Subways are projected, in addition to the three mentioned, at Spadina Road, Howland Ave., Bathurst St., Christie St., Shaw St., Ossington Ave., and Dovercourt Road. These are all to the west of the semi completed portion.

The elevation work is being carried out under A. L. Hertzberg, M. Can. Soc. C.E., Division Engineer, Ontario Division, with B. Ripley, M. Can. Soc. C.E., Engineer of Grade Separation, directly in charge.



Avenue Road Subway, North Toronto Grade Separation.

The question of introducing on the C.P.R. Eastern Lines, the unit system of organization for the general superintendents and superintendents offices which has been in force on the Western Lines for some time, is said to be under consideration.

Canadian Northern Ontario Railway Supply Car.

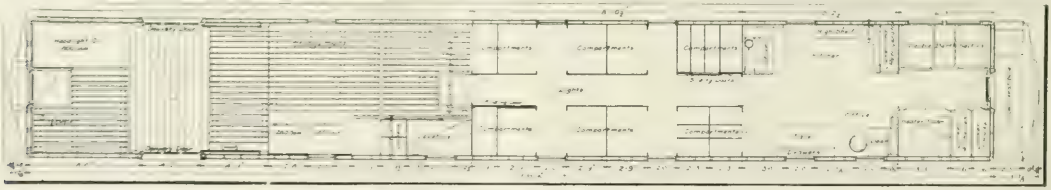
Early this year, the C.N.O.R. placed in service a new supply car, which is illustrated herewith. The car is an old Pullman sleeping car, rebuilt under the direction of A. L. Graburn, Mechanical Engineer, to designs evolved in conjunction with L. C. Thomson, Storekeeper, embodying a number of new features that have appeared desirable to the latter through his long familiarity with store cars, both on the C.N.R. and the C.P.R.

The fact that the car is a piece of passenger equipment, discarded, not on account of being unserviceable, but rather from the fact that for present day equipment it was a little antiquated, made a splendid base on which to construct the store car. While but little of the old body remains, the underframing, car framing, and trucks have been utilized, the whole making for a very solid car. The trucks are six wheel, with 36 in. steel wheels; the underframing is of steel I beams throughout; and it is provided with standard draft rigging. The air and signal arrangement is that of a standard passenger car.

The car was of the old open vestibule type. One of these vestibules, on the store end, has been removed. The overall dimensions of the car body are 66 ft. 2 ins. long, by 9½ ft. wide. As refinished, the window arrangement of the former sleeper has been rearranged with a few higher windows along both sides. The finish of the car corresponds to the C.N.R. standard.

The open vestibule end is the living and business end of the car. To the right on entering from that end is a double berth section for the attendant in charge. Opposite this section, in the corresponding length of the car—6¼ ft.—are three sections, two of which are shelf lockers, with a heater room alongside, containing a Baker heater with its auxiliary apparatus.

Beyond this section of the car is a room 10 ft. 2½ ins. long, designed for the attendant's general living quarters, the portion on the right forming the kitchen, and the opposite side the office. In the kitchen portion, at the entry end, is a double locker, cupboards above and refrigerator below, the front of the cupboard forming a kitchen ledge and sink. In front of this is a garbage chute to the outside of the car. The opposite end of the kitchen section contains a small kitchen range, insulated on the two wall sides and floor. The office half of the room contains at the entry end a small desk attached to the wall, with revolving desk chair in front. Over the desk are tiers of pigeon holes for the stores bills, etc. To the rear of the desk, along the side of the car, is a table 4 ft. long, used principally in wrapping up parcels for delivery at the different stations.



Plan of Supply Car, Canadian Northern Ontario Railway.

Beyond this double utility room, in the centre of the car, is an 18 ft. 10½ in. section containing three storage sections on each side of a central aisle. These sections are of different shapes and sizes, to accommodate to the best advantage the full range of stores carried. The first section at entering on the right is a set of four vertical compartments above and below, opening into the centre aisle by sliding doors. Across from this section is a double section of tiers of drawers, entered both from the office and a cross aisle. The other store sections take different shape, all opening from the cross aisles with the exception of the end section on the left, which has sliding doors from the centre aisle. The two sections opening on the centre aisle was necessitated by the lack of space in the narrow cross aisles.

Supply Car, Canadian Northern Ontario Railway.

Beyond these storage sections, the balance of the car is a long open room, except for the lavatory on the left, and a tier of special lockers beyond the latter, for the storage of inflammable material, such as matches, fusees, etc. This section is kept under lock and key, and the interior, both walls and door, is lined with galvanized iron to minimize the fire danger. This is an idea embodied by Mr. Thomson as the result of an experience encountered some years ago in the handling of inflammable stores. The tightness of these compartments makes the possibility of fire very small.

This large room, 30 ft. 10 ins. long, contains three oil tanks, two small 280 gal. tanks for journal and signal oils, and the third at the very end of the room of 800 gal. capacity, for headlight oil. All these tanks are equipped with Bowser measuring and drawing apparatus. This whole room, with the exception of the strip across between the two 4 ft. sliding doors near the end of the larger tank, is laid with slatting. Under this, on the underflooring, is a surface of galvanized iron, draining to 1½ in. drain holes at each end of the room, through which all the wasted oil is drawn off from the floor of the room. This idea of slatting on the floor and surfacing underneath is one of the most valuable features of the car.

The side doors are very similar to those found in baggage cars, sliding on wheels into protected door pockets. Across between the doors, the surface is of 2 in. close flooring. All the stores are given out through these side doors at the stations, nobody but the attendant being allowed in the car, he thereby having a closer check on all the stores. The practice in service is to have the stores for delivery at a certain station made up on the run and piled opposite the delivery door ready for serving out without delay. For safety, there is a 1 in. grab iron across the door opening above the door.

The large oil tank room is also the store room for bulk stores, such as tie plugs, which can be heaped in the open spaces at the end of the room or opposite the small tanks.

The lighting is from six pairs of oil lamps suspended from the roof, spaced at even intervals down the centre of the car. There is also a side bracket lamp over the attendant's desk. Fire protection is provided for by a chemical fire extinguisher above the desk, and four pails of sand on a ledge over the door leading into the oil room.

The factor of operating the car is well looked after in the design. All the oil tanks have connections on the under side of the car through which they are filled, removing that dirty operation from the body of the car. Any oil that does slop out inside the car is drained off as noted. All supplies are loaded into the car at the loading depot through the side doors and distributed to their several locations for redistribution along the line without having occasion to go into the living section of the car at all. The whole arrangement is a considerable improvement on the former stores car, which was an old caboose, slightly rearranged for this particular service. Everything has been so carefully planned for convenience, that the writer is informed by Mr. Thomson that it is now the practice to frequently place the car near the head end of a passenger train, and while the train is running the order for the next station is being made up, and on arrival, everything being in readiness at the side door, it is unloaded with dispatch and the receipt for the same taken without delaying the train.

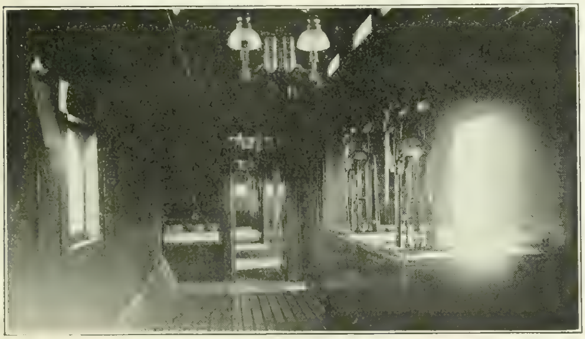
The Reid Newfoundland Co.'s employes held their first annual outing at Octagon, Aug. 23.

During June there were 14 fatal and 10 non fatal accidents on railway construction in the Dominion. Thirteen of the deaths were due to premature explosions, and one to a derailment.

Railway Transportation Problems of the Future.

By J. Grant MacGregor, M. Can. Soc. C.E., Assistant Engineer, Construction Department, C.P.R. Red Deer, Alta.

The building of so many transcontinental lines across the Dominion, and the opening up of new inland and ocean waterways for the transportation of the produce of the country, may be regarded as the dawn of a new era in the history of railway transportation. The rapidity of the pace set by competitive lines is in a measure responsible for the state of bewilderment in which the country now finds itself when confronted with the most important railway building and transportation problems of the age. The situation has been the subject of much controversy both among members of the engineering profession and those concerned financially in the economics of present-day railway construction and operation. Precedents based on past experience in pioneer railroading have been disregarded and the researches and life work of the greatest authorities on railway economics have been found antiquated when compared with the progress of recent events. There is also a decided lack of harmony between different departments of the various railways in regard to the advantage of the present practice of building railways with long stretches of low ruling grade, all of which tend to unnerve the engineer who may have placed too much faith in the adaptability of old and well known rules to modern conditions.



Supply Car Interior, looking from Oil Room towards Vestibule End.

Oil Room of Supply Car.

The question that now arises is, To what extent are the conditions changed that require a departure from well known rules and practice in railway building? The two greatest factors that have entered into and hold sway in all problems of railway engineering and operation since the invention of steam are those of "tractive power" and "train resistance," and as long as the law of gravitation exists we shall have at least one of those to contend with. In considering the other factors, the development of steam tractive power and its application to overcoming train resistance, we find that no great strides have recently been made whereby increased efficiency in the hauling power of locomotives should bring about a change in the conditions affecting grade and alignment. Until closer co-operation is instituted between the operating and engineering departments of the various railways, very little will be accomplished in the way of building railways on a basis by which the best results can be obtained in their operation. Too frequently is advantage taken of a new line with low grades as an accessory for the use of old or obsolete locomotives, whereby a saving can be effected to the operating department at the expense of the construction department.

If, by constructing railways with lower ruling grades, a solution is not obtained to the problem of hauling heavier train loads with present locomotive efficiency, then a step has been taken in the wrong direction, which is not at all unlikely. The solution, however, will not be found in any further development of the increased weight of the present unit of steam tractive power. More likely it shall be found where a greater number of units are used, whether of steam, electrical or oil gas propulsion, whereby the load to be hauled can be increased to a proportion consistent with the proper train unit for minimum cost of operation.

But to return to the question of the value of lower ruling grades. It should not be necessary at present to make a strong plea for their use wherever they can be introduced at a reasonable cost. The fact that millions are being spent annually by the various trunk lines on grade reduction should be sufficient evidence that the movement has got beyond the experimental stage. The wisdom of such a course is apparent from the beneficial results obtained in the way of increased revenue and lower cost of operation. The changes and modifications of grade profile, designed to produce the beneficial results obtained, have invariably been based on well known rules in railway location and data obtained from experiments of the actual performance of trains under the conditions sought. If there should be any uncertainty about the continuous performance or endurance of certain classes of locomotives on long stretches of low ruling rades, the sooner the value of such a factor is taken into account the better. In the meantime, are we to assume that the defect is of a mechanical nature, and that until such time as it can be removed the grade profile should be modified to provide suitable resting places for the recuperation of the "old horse?"

Under present conditions, what is most urgently required is a more definite system of grade profile analysis, by which the proper amount of tractive power can be assigned to the requirements of each division of road to be operated. The analysis referred to, once carefully prepared and put in graphic form, should show the performance of each class of engine between stations, with a load line adusted to conform to the requirements of minimum speed over long stretches of ruling grade. To obtain satisfactory results, close co-operation is necessary between all departments affected.

The growth of the trade of the Dominion, affecting transportation companies, is so rapid that greater caution than ever should now be exercised in constructing new arteries of commerce. It would appear that in determining the main arteries of commerce of the future, greater consideration should be given to conditions affecting their future development, than to questions of rapid transit and shortest route under present conditions. The fact must not be overlooked, however, that there will always be a limit to the extent to which physical obstacles can be removed from a route, and for this reason it may be necessary to look for developments along other lines. Some of the sources from which relief must be expected are already to some extent receiving attention from the principal transportation companies, such as greater facilities for a more speedy and continuous flow of traffic in both directions along the main arteries, with corresponding facilities for the better handling of freight at distribution and terminal points.

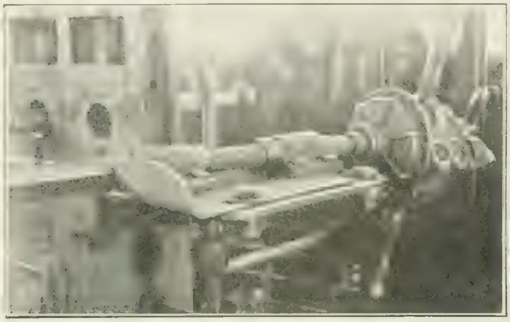
If the demand, however, for increased train loads should continue to find favor, a change in the present principle of the application of tractive power to the hauling of trains must be exepected. It is to be hoped the day is not far distant when it will be found more economical to combine the power now developed by such a huge fleet of locomotives into stationary engines for the distribution of power in a manner better adapted to modern requirements, so that it shall no longer be necessary to have one or two portable power houses attached to each train, unduly wasting the products of our mines, and diffusing the sparks which destroy the combustible products of the forest and prairie.

Government Elevator at Port Arthur.—Access is to be provided for the C.P.R. and the Grand Trunk Pacific Ry. to the Dominion Government elevator at Port Arthur, Ont., by means of a spur line to be built by the C.P.R., and connecting with the Canadian Northern Ry. An order to this effect has been made by the Board of Railway Commissioners, which directs that the cost of the spur line is to be borne by the Board of Grain Commissioners.

Railway Mechanical Methods and Devices.

Tube Expander at Toronto, Hamilton and Buffalo Railway Shops.

Numerous methods of flaring the ends of boiler tubes preparatory to safe ending are in vogue at different shops, the majority employing the taper pin method, the heated end of the tube being forced by impact on the end of a taper pin, flaring the end slightly.



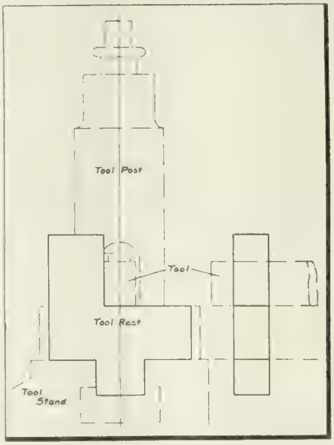
Rotary Tube Expanding Mandrel.

The method used in the T. H. & B. R. shops at Hamilton, Ont., W. T. Kuhn, Master Mechanic, is unique, and has some features about it that recommend the practice. Instead of the impact force alone being used for the flaring, a rotary motion of the flaring pin is employed in conjunction, the arrangement being as shown in the accompanying illustration. In addition, the taper pin resembles in some respects a taper reamer, with four equally spaced shallow flutes extending the length of the pin. The body of the pin is carried in two bearings on an elbow support from the side of an automatic air hammer, where the subsequent welding operation is performed. The rotary motion of the pin, in conjunction with the flutes, causes the tube end to spread more rapidly, producing an excellent job. The pin is driven by an air motor as shown. An adjustable stop plate on the surface of the supporting elbow gauges the depth to which the tube must be forced over the revolving pin.

Loading Wheels at Grand Trunk Pacific Railway Shops at Rivers.

A novel method of loading mounted car wheels is used at the G.T.P.R. shops at Rivers, Man. The wheels as mounted at the wheel press in the shops are rolled out to the storage yards, where they are stored on interlocking double tracks in the conventional manner.

These storage tracks lie at right angles to the locomotive house lead track. When it is required to load a flat car with wheels for shipment to another divisional shop, the car is spotted on the lead track about 200 ft. away from the wheel storage tracks, and blocked in that position. On the storage track end of the flat car, two lengths of rail are placed, sloping up from the track rail to the car platform, and secured in place, forming a rail ramp. The wheels to be loaded are placed on the lead track opposite the storage space, and with recessed end sticks several men put the wheels in motion, increasing the speed of the wheels, a pair at a time, until by the time they have reached the rail ramp up to the car, they have a considerable impetus, and run up the ramp by their own momentum on to the car. This method is very rapid, but of course is not at all economical on account of the number of workmen required. It might be found useful at small shops.

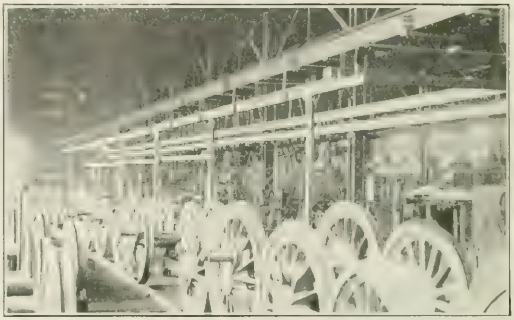


Tool Rest That Insures Parallel Boring.

Lathe Tool Support at Grand Trunk Railway Stratford Shops.

For internal boring in the engine lathe, unless the cut be extremely light, the tool has a tendency to back away from the work and produce a hole tapering from the entering end. All mechanics have doubtless experienced this difficulty.

A simple expedient for the removal of all trouble from this cause is in use in the G. T. R. locomotive shops at Stratford, Ont., and is illustrated herewith. Fitting into the groove of the tool stand, and breaking up under the tool at the rear, there is a block of steel. This tool rest block has an upward projecting arm on the left against which the tool is set when fitting in the tool post. The consequence is that the tool when boring in trying to swing away from the work, is prevented from so doing by the butt end of the tool being stopped by this tool rest. The fit of the tool rest block must be such as to prevent any lifting action from the tool in swinging tipping the block over on a corner. This is taken care of by making the block of such a height that the rear of the tool rests on the upper surface of the block.



Light Crane Over Driving Box Department.

Department Crane in the Canadian Pacific Railway Winnipeg Shops

In the C.P.R. locomotive shop at Winnipeg, the driving wheel and driving box departments are located side by side in one of the side bays of the building. The driving wheels as stripped from the locomotives are run in on tracks, with the driving box still attached. In this location the boxes are removed.

The crane way shown in the illustration covers the length of the driving box department, a small traveller accommodating all the machines. On three of the crane supporting columns are attached small jib cranes, by which the driving boxes are swung over from the driving wheel tracks into the driving box department, where they are carried to one end, where they are thoroughly cleaned on a cleaning stand, and then taken to the different machines in the department.

The crane is of simple construction, but is a most useful adjunct in the handling of the work through the department.

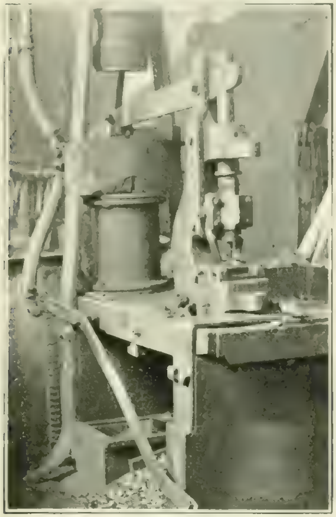
Air Operated Punch at Grand Trunk Railway London Shops.

In the blacksmith shop of the G.T.R. car shops at London, Ont., of which T. Treleaven is Master Car Builder, there is a small punch for piercing small holes in thin metal, the unique feature of the press being the fact that it is home made and operated by air.

On a cast iron frame, there is placed a 2½ in. plank as the illustration shows, on the rear end of which there is mounted vertically an air cylinder, bottom down. Straddling the air cylinder is a loop of ¾ x 4 in. bar iron, holding in the upper end of the loop a couple of large chunks of rubber such as are used in the Bradley hammer. These cushion the plunger of the air cylinder at the upper end of the stroke when relieved from the strain on the hole being pierced.

On the front end of the board base, there is a simple punch press frame guiding a vertical plunger. Just back of this plunger, there is looped band from the inner surface of the frame, carrying the fulcrum pin, on which a bar from the plunger at the rear fulcrums, being connected immediately in front to the punch plunger.

In a channel in the base of the punch frame, the dies are located, the punch lining up directly over it in the punch press plunger, in which it is secured by a set screw.



Air Operated Punch Press.

The press is quite powerful, as may readily be surmised when it is considered that an air pressure of around 100 lbs. in a 10 in. cylinder, with the multiplication of the fulcrum arm, is used. The operation is almost the same as on any up to date punch press, the air being admitted to the cylinder by the pressing of the pedal to the left, as in a power driven machine. The blacksmiths find it of great assistance in the production of their work, where they are hampered by the lack of a large power machine.

Oil Screw Jack at Canadian Northern Railway Shops.

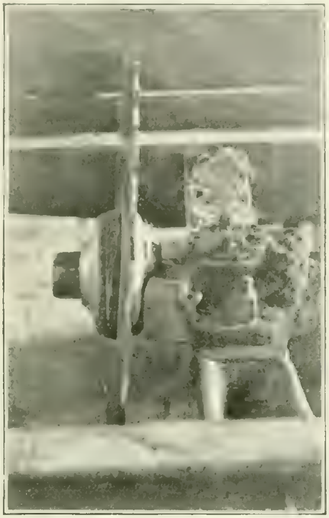
In the C.N.R. shops at Winnipeg, there is in use an oil screw jack, as shown in the accompanying illustration. The principal use to which it is put is in removing bolts from tight holes, such as those connecting the parts of a frame. From its small construction it can be worked in a tight corner, where there is small clearance between the bolt head and the frame.

The body is of steel, bored lengthwise, and at right angles at one end. In the end of the long bore is a bushing carrying a snugly fitting 1½ in. screw. The other bore contains a short 2½ in. piston. The method of using is obvious. With the small diameter screw, and proportionately large lifting piston, a high pressure is possible.

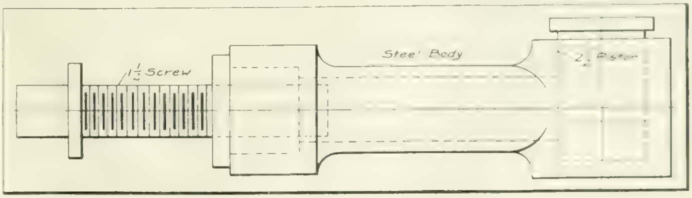
For removing bolts from frames, it is a much more satisfactory medium than that of using small cannon, a practice common in some shops, although this, of course involves considerable danger to the mechanic.

Sawing Truck Bolster Truss Rod Grooves at Grand Trunk Railway Port Huron Shops.

The truss rods applied to truck bolsters pass up at an angle through the wood of the bolster and come out through the centre of the end, where the end cap, with a nut on the end of the rod, secures it in place. Instead of boring a hole diagonally through the wood from both ends, it is a more satisfactory method to remove the wood on the angle down to the path of the rod through, for the width of the rod. The truss rods being usually about 1¼ in. in diameter, require that the channeled cut must be at least that width. To cut this channel through the wood would require a solid cutter if cut out by the ordinary methods.



Thin Rip Saw Set to Channel Truss Rod Grooves.



Oil Screw Jack for Forcing Out Tight Bolts.

In the woodworking department of the G. T. R. shops at Port Huron, Mich., a different method is employed. Instead of a wide cutter, an ordinary thin rip saw, as shown in the illustration, is all that is required. On the saw arbor, on each side of the saw, there are tapered wooden washers, thin at one edge and thick at the other, as shown on the left of the saw. This sets the saw off at an angle with regard to the arbor, causing the saw to oscillate from side to side, sweeping out a path wider than the thickness of the saw, depending on the taper of the wooden washers.

The bolster [illegible] supported over the saw by the centre, the end resting on the saw table, the centre being raised the correct amount to give the necessary angle to the cut. When revolving, the saw presents a solid appearance as if a saw the width of the cut being made. It is most surprising to observe the rapid rate at which the saw set in this manner cuts through the wood, leaving a clean channel.

One of the first questions that arises in the mind of an observer is whether the scheme is safe, and if the strain is not sufficient to tend to cause the saw to break. Enquiry elicted the information that while this method of channeling the bolsters has been in use for a number of years, not a single accident has occurred, seeming to prove that the method is a safe one, and could be safely recommended. All the bolsters that go through these shops are slotted in this manner.

New M. C. R. Buildings at St. Thomas.

The M.C.R. is having a new locomotive repair shop and power plant built at St. Thomas, Ont. The locomotive shop is 290 by 179 ft. The construction consists of concrete foundations, brick masonry walls, steel superstructure, steel sash, cement tile roof covered with felt and pitch roofing, and creosoted wood block floors. The building has three longitudinal bays, viz., erecting bay, 72 ft. wide, accommodating 13 pit tracks; heavy machine tool bay, 60 ft. wide; and light machine tool bay, 45 ft .wide. The erecting bay is to be served by a 150 ton electric travelling crane, and the heavy machine tool bay by one of 10 ton capacity. The building will be equipped complete with hot blast heating system, modern plumbing, electric lighting and power facilities, workmen's lockers, locomotive material racks, and shop accessories.

The power plant building is 87 ft., with elevated coal trestle and storage bins 16 ft. wide along the boiler room side. The construction will be similar to the locomotive shop. The equipment will consist of four 250 h.p. boilers with chain grates, radial brick chimney, steel smoke breeching, 375 kva. engine driven alternating current generator delivering current at 575 volts, 3 phase, 25 cycle. Additional power will be supplied by the Ontario Hydro-Electric Commission.

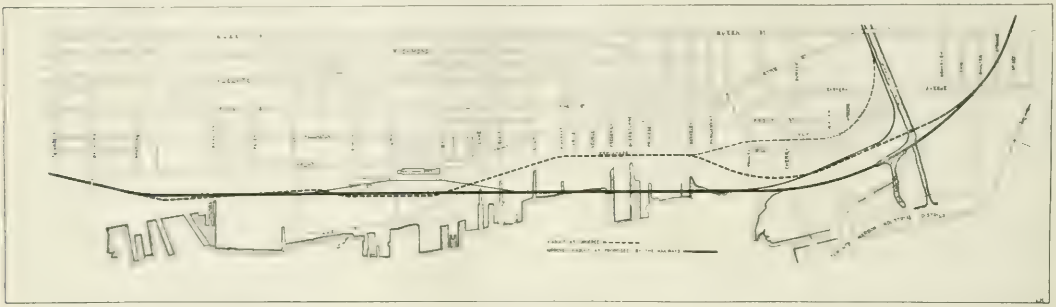
One steam driven air compressor will be installed in the plant at present, and additional compressors later. The greater portion of the machinery and equipment has been purchased, and construction will be carried out so as to get the new plant into commission early in the winter.

The plans and specifications were prepared by the Arnold Co., Chicago, Ill., which is also doing the construction and will equip the building complete.

Railway Viaduct Along Toronto's Water Front.

After protracted negotiations, the Toronto viaduct question entered recently on what is probably its final stage prior to construction, when a draft agreement to be entered into between the city of Toronto, the Toronto Harbor Commissioners, and the Canadian Pacific and Grand Trunk Railway Companies was submitted to the City Council and approved. In submitting the agreement for consideration, G. R. Geary, Corporation Counsel, and R. C. Harris, Commissioner of Works, gave a history of the circumstances leading to its preparation, and pointed out its principal features, as follows.—

"In June, 1909, by order 7200 the Board of Railway Commissioners for Canada ordered a viaduct to be built from a point west of John St. to a point at or near Berkeley St., from the point at or near Berkeley St. on the C.P.R. right of way to Queen St., and from the same point on the Grand Trunk Railway right of way to Logan Avenue. The order, together with the plan incorporated therein, provided for the dimensions and details of construction and for the existence of three tracks on either side of the viaduct east of Church St., and the city was ordered to pay to the railway companies one-third of the cost:—1. Of the viaduct, the elevation of the C.P.R. coach yards and the G.T.R. Don sorting yards, and the elevation of the tracks from Berkeley St. to Queen St. and Logan Ave. respectively, excepting rails and track laying: 2. Of the erection of bridges at Eastern Ave., John St. and Spadina Ave.; 3. Of the substructure for the elevation of necessary tracks and platforms consequent upon the increased elevation of the proposed new union station.



The Viaduct to be Built Along Toronto's Water Front.

"On a revision of the plan, York St. was shown to be closed, and an application was then made by the city, and the Board issued order 16019, Feb. 22, 1912, amending the plan by showing York St. open to Lake St., and that a subway the full width of the street be provided through the elevated portion of the railway lines and tracks, and declaring that the question of compensation to be made to the C.P.R. for the lands taken, or consequential injury or damages to its facilities by reason of the opening of the said street, be reserved for further consideration. It will be seen, therefore, that the question of the opening of York St.—which had been closed many years before by agreement of the city—involves substantial questions of compensation, which are not part of the original viaduct order, and have yet to be decided upon. The cost, then, of the old order, as amended, was fixed at one-third of the cost of the viaduct, as ordered by order 7200, together with such compensation (if any) as the city may be called upon to pay to the C.P.R. for lands taken for opening York St., or consequential injury or damages to the company's facilities by reason of the opening of the said street.

"In the meantime, and extending from the issue of the order in 1909, to the final judgment of the Privy Council, May 10, 1911, the question of the jurisdiction of the Railway Board to make its original order, and its right in law so to do, were taken before the Courts; but the contention of the city was finally upheld, and judgment given that the Board had jurisdiction to make the order.

"Closely allied with the construction of the viaduct is, of course, the question of the new union station. The Board ordered that plans of a new union station be submitted, and these were submitted—one by the Toronto Board of Trade, providing for a stub or terminal union station, and one by the G.T.R., providing for a station of the ordinary type, but with improvements. The plans were thoroughly discussed, and all parties interested were heard, and the Board finally by order 17034, July 18, 1912, approved of the plan submitted by the G.T.R., and ordered immediate construction. This plan was slightly modified on a subsequent application, but in its essential principles remains intact.

"All matters, apparently, being settled, the city pressed hard and constantly for the commencement of the work. One appeal remained open to the protesting companies—the appeal provided by sect. 56 of the Railway Act to the Governor-General in Council. The city having applied to the Railway Board at its sittings in Toronto, held on Sept. 26, 1912, for a peremptory order for commencement of the work, all parties were heard in regard to the matter, and the railways finally declared that they would at once take an appeal to the Governor General in Council. A strong attempt was made to set aside the Board's order for a viaduct, the alternative proposed being that of bridges, connecting, generally speaking, Front St. with the water front. As the argument developed, it was recognized by the railways that they could not succeed on this ground, and that bridges would never be substituted for a viaduct, and they offered, as an alternative, a proposal that a different situation for a viaduct be considered. Judgment was reserved, but the Chairman of the Board of Railway Commissioners, on the same day, instituted proceedings for an investigation into the merits of the scheme suggested by the railways. This marks the inception of the present scheme. Plans were drawn and submitted to the engineers for all parties, terms of a proposed agreement became the subject of discussion between all parties, and finally an agreement was prepared, which is before you for adoption. The plan accompanying the agreement fixes the new location of the viaduct. This agreement covers the whole situation as fully as can be. It has been arrived at after being given careful consideration, has been settled by and is approved by the Chairman of the Board.

"On the question of cost, the outstanding feature of the agreement is, that the city's share of what, for convenience sake, we may call the new viaduct, is limited to an amount which is one third of the cost which it had to pay under the old viaduct order. There are, in addition, certain items of work which were to be done in connection with the old viaduct, but which were not included in the order and plan of 1909. The cost, then, to the city is one third of the cost (composed of physical cost and damage) which the old viaduct would have caused, the city's share under the York St. pronouncement, when made, and the items just above referred to, which the Board may consider as part of the old viaduct cost.

"The outstanding feature as to the location of the viaduct is that it is to be built considerably to the south of the existing rights of way of the railways upon which the old viaduct was to be built. This means that, despite construction, business can be carried on as usual. The importance to the city of this arrangement will be readily seen when you realize that so great was the congestion of freight, owing to lack of accommodation in Toronto, that there was a blocking back even as far as the yards in Fort Erie and Buffalo; so great that for many weeks last year there was an embargo on freight shipped from the United States to Toronto. This caused very great disturbance of business conditions here, and how much greater would have been that disturbance can be readily realized if you contemplate the partial and, for some periods, practically total disruption of terminal facilities in Toronto extending over three years.

"Since the original viaduct order, the Toronto Harbor Commissioners have acquired the city's interests along the water front, and have engaged in the preparation of and brought to complete form plans for a great development in Ashbridge's Bay and along the water front of Toronto Bay. Naturally, being so vitally interested, the Commissioners were represented throughout these negotiations, and have been very active in their assistance, as, of course, has been also the Board of Trade. The new location of the viaduct to the south presented an opportunity to negotiate for the acquisition of the water front, and one great advantage wrought by the present arrangement is, that through it the Toronto Harbor Commissioners become possessed of practically all the water front on Toronto Harbor. By the agreement now under consideration, the new right of way for the viaduct is to be acquired through the purchase of all the property between the existing rights of way of the railways and the Windmill Line; and, after the actual amount to be used by the railways, and a street 47½ ft. wide is set aside, the remaining portion thereof, north and south of the new viaduct, is to be turned over to the Harbor Commissioners on paying 50% of its actual cost, which means that the railway company acquires its right of way of 230 ft. in width on paying 50% of the total cost of the property referred to, that is, from the street 47½ ft. wide immediately south of the railway's right of way south to the Windmill Line, while the Harbor Commissioners get what may be said to be the preponderating balance on payment of the same amount. An alternative option is reserved to the Harbor Commissioners to take over all the property to the south of the new viaduct on paying one third of the total cost of acquiring the entire block from the said proposed street south to the Windmill Line, less what may be realized from the sale of that part of such block between the said street and the new viaduct.

"In connection with this plan for securing control of the water front under the viaduct order, we are advised by the Harbor Commissioners that agreements have been practically reached between the railways and the Harbor Commission by which all the property west of Yonge St. bordering on the water front is likewise to be turned over to the Commission.

"In regard to the new union station, the Chairman of the Board advises us that at the present moment experts are engaged in revising the existing plans with a view to constructing a station which will fully meet all requirements of appearance and utility, and he assures us further that actual work will be commenced at the earliest possible moment."

Railway Route Map Approved.—The Minister of Railways approved, July 30, the Lake Erie and Northern Ry. route map for revision of line between Waterford and Brantford, Ont., 10 miles.

Tree Windbreaks on the Canadian Pacific Railway.

Trees to replace portable snow fences are being tried on a large scale by the C.P.R. Along the main line and within the district broadly defined as lying between Winnipeg, Man., and Calgary, Alta., more than 1,356,200 trees had been planted for this purpose up to Dec., 1912, by the Forestry Branch of the Natural Resources Department.

The country traversed by the C.P.R. in which this tree planting has been done is largely rolling prairie, and the frequent high winds have an unobstructed range over which to drift the winter's snow. Portable fences of a standard type have been employed to arrest the snow and prevent it from drifting into the cuts and blockading traffic. This method has the usual disadvantage of high first cost and continual repairs and maintenance.

As in the case of portable snow fences, the distance of the tree windbreak from the track depends upon the topography at each point and upon the width of right of way. In general, however, the inside row is from 75 to 85 ft. from the track.

The method of planting the windbreaks may be briefly described as follows: The land is broken and backset the first year, subsoiled the next, and planted the third. The planting crew consists of a foreman, 12 laborers, a cook, and two teamsters to each camp. The laborers are divided into three-man groups. In this way one man digs the holes, another places the trees in position and packs the earth firmly around their roots, and the third fills in the earth to a little above the old nursery mark, places it around the trees and levels the ground at each side of the row. This method was found to be the fastest and most satisfactory, as the foreman could then check over each group's work.

The young trees, which were grown in the C.P.R.'s nursery at Wolseley, Sask., were all baled in gunny sacks and sent by baggage or freight to the station nearest the camp. The man placed in charge of each car was supplied with two or three barrels of water, with which he kept the roots moist while in transit. As soon as the trees were received they were heeled in and after sundown distributed by wagon to each plantation, where they were again heeled in for the next day's work. When the trees were taken out next day for planting they were carried in a pail or tub containing a puddle of earth and water.

Manitoba maple, Russian poplar, cottonwood, laurel leaf willow, red willow, golden willow, ash and spruce are the species of trees which have been planted. Two species of shrubs were also planted—Caragana and Artemesia. All trees were two to three year old transplants and would vary from 24 to 36 in. in height. The loss or renewal has not exceeded 10%.

The trees have been planted 4 ft. apart in the rows and 7 to 8 ft. between rows, leaving a cultivated strip 8 ft. wide around the plantation. This reduces the cost of cultivation, as the trees quickly spread foliage and by shading the ground soon kill the weeds. With the rows 7 or 8 ft. apart there is plenty of room for a disc harrow to be worked between them, thus saving much time which would be wasted if small one-horse cultivators were used.

Two furrows have been ploughed on each side and across the ends of these plantations, thus making a fire guard of about 20 in. and a cultivated piece of more than 8 ft., or in all a strip of nearly 10 ft. in width around the plantation. Experience has shown that ground fires in that locality will not jump such a fire guard, or even injure plants within it.

As yet the saving in cost between portable fences and tree windbreaks is very indefinite. The trees first set out in 1908 were only high and strong enough to remove the portable fences during the fall of 1912, and owing to the light snowfall during the past winter little information as to relative value of trees and fences as snow barriers has been available to those interested.—Engineering Record.

Trees Just Set Out. Note Panel Fence Off Right of Way.

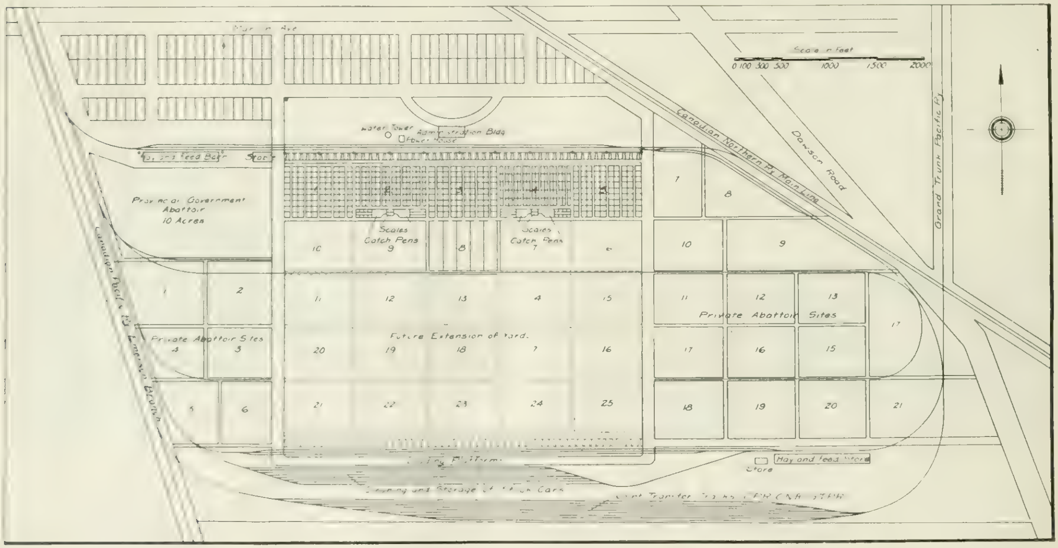
Tree Snow Fence, With Wide Fire Guard, near Medicine Hat, Alta.

The American Boiler Maufacturers' Association will hold its 25th annual convention at the Hollenden Hotel, Cleveland, Ohio, Sept. 1 to 4, when amongst other matters to be dealt with will be the adoption of standard and uniform boiler specifications. The entertainment committee are making special efforts for the success of the convention in view of the fact that the association, this year, celebrates its silver anniversary.

The G.T.R., it is announced, will build a larger, and more up to date elevator at Point Edward, Ont., in place of the one recently destroyed by fire. The new building will, it is said, be of steel and concrete, and be absolutely fireproof. It is probable that the old site will be utilized.

Union Stock Yards at St. Boniface, Manitoba.

The union stock yards which have been constructed at St. Boniface, Man., have a unique organization. In 1911 the Manitoba Legislature incorporated the Public Markets, Limited, with an authorized capital of $1,000,000 in $100 shares and head office at Winnipeg, to establish stock yards, etc. The shareholders are limited to railway companies which enter into an agreement with the Government. Each railway company appoints one director and the Government appoints one, who, however, has no vote except in case of a tie. At present the shareholders are the C.P.R., with 334 shares; the Canadian Northern Ry., 333 shares, and the Grand Trunk Pacific Railway, 333 shares. There is provision for the control of rates and charges by the Government, but not so that 6% cannot be earned upon the capital invested. The Government also reserved the right to the first selection of a site, not exceeding 15 acres, on which it is proposed sometime, either directly by the province or by some municipality with provincial assistance, to establish a public abattoir. The Government also regulates the charges, tolls, etc., in the yards.



Union Stock Yards, St. Boniface, Man.

The land on which these yards are being erected consists of 232 acres at St. Boniface, 2½ miles from the heart of Winnipeg. On the north is Marion Ave., the main thoroughfare to the Red River, which divides Winnipeg and St. Boniface; on the extreme south are the joint transfer tracks of the Canadian Pacific, Canadian Northern and Grand Trunk Pacific Railways; on the west is the C.P.R. Emerson branch, and on the east are Dawson St., which intersects Marion Ave., the C.N.R. main line and the G.T.P.R. The three trunk lines come into the yards on equal footing, each will deliver its stock at transfer tracks which pass east and west close to unloading chutes, which are situated at the extreme north of the yards proper, affording interchange of traffic between the C.P.R. on the west, and the C.N.R. and G.T.P.R. on the east. The stock hauled to the yards by the above railways will, upon arrival at transfer tracks, be turned over to the Union Stock Yards Co.'s railway for placing at chutes for unloading. There are 50 chutes, hence 50 cars of stock may be placed at one time and unloaded without interruption. To the north of the chute tracks are two supply or storage tracks where may be held trains of stock awaiting their turn to be unloaded. The chutes open into an alley running east and west of the yards, so that as stock is moved from unloading chutes, they pass through the alley to any part of the yards to which they may be assigned. Paralleling this alley is another alley, which may be used for stock moving in the opposite direction, thus facilitating the movement in either direction without much chance of mixing it.

Just south of the chutes—bottle shaped—are blocks 1 to 5, which represent the developed pens; 6 to 25, excepting block 8, which is partially developed, represent the undeveloped land. Each block contains 2½ acres, so that the 25 blocks, approximately, contain 62½ acres. The finished pens are as follows:—Blocks one and five, 80 each or 180 open pens; block two, 98 covered pig pens; block three, 90 covered cattle pens; block four, 80 covered sheep pens, making a total of 448 pens. At the south side of blocks 2 and 4 are two brick scale houses, each equipped with the most modern scales, and adjoining the scale house is another main alley, also running east and west of the yards, which will be used as an exit for live stock. In this alley, several hundred feet apart, are six hydrants, each equipped with hose for fire protection.

One of the chief features of these yards is, that every foot of floor space, from the unloading platform, which is 8 ft. wide, including chutes, alleys and pens, are made of rough concrete, which may be flushed as required, thus the yards may be kept in a most sanitary condition. The troughs are also made of cement.

Opposite to and north of the chutes, occupying the middle ground between the yards and Marion Ave., stands the administration building, a handsome three story structure of rich, dark red brick, 101 by 53 ft. and 40 ft. high, finished in red oak, and when completed will contain 20 rooms or more for offices for those doing business at the yards, including the Stock Yard Company. To the west, 140 ft. from the Administration building, is the power house for furnishing water and heat to the yards and buildings. It has two large boilers, and an electric motor capable of forcing water 100 ft. high into an iron tower of 150,000 gallon capacity. From this tower water is supplied throughout the plant. The store house has not yet been built. To the west and across from the main alley of the yards is erected a comfortable, commodious brick stable, which will accommodate 15 horses, and to the west a barn covered with corrugated iron, as a protection against fire. The barn is adjacent to the tracks, is 400 ft. long and will hold hundreds of tons of hay.

South of the hay barn ten acres have been blocked off, which is for the Provincial Government for public abattoirs, etc., and which still leaves great blocks of land to be used as required, for leasing to private abattoir companies, etc.

J. W. Buckpitt, who was connected with the New York Central Stock Yards at Buffalo, was appointed Superintendent recently, as previously announced in these columns.

Aid to Injured, Instruction Car.—The C.P.R. has fitted up a special car for giving instruction in first aid to the injured work, to employes on its lines. The car, with an instructor has been started out on a complete tour of the system, from New Brunswick to the West and will remain at the grand divisional points for about three weeks, and at the smaller ones, for about ten days.

Poles Purchased in Canada in 1912.

The statistics in this bulletin are based on reports received from 207 telephone companies, 131 electric light and power concerns, 29 electric railways, 18 steam railways (operating telegraph and telephone lines), and 4 telegraph companies. These 389 companies reporting purchases in 1912 represent at least 95% of the wooden pole users in Canada, and the figures in this bulletin include at least 95% of the poles purchased in 1912. Pole users are divided into two groups, with steam railways, telephone and telegraph companies forming one group, and electric railway, power and light companies the other.

Table 1 shows the number, total value, average value and per cent. distribution of poles purchased in Canada in 1911 and 1912.

There were 608,556 wooden poles reported as having been purchased in 1912, an increase of 22,853 poles, or 3.9%, over 1911. While this increase is slight, it follows a decided decrease from 1910 to 1911. The average pole has a life of at least ten years, and the demand for poles is therefore more or less intermittent, depending on the building of new pole lines.

Altogether nine kinds of wood were reported for poles in 1912, with eastern cedar heading the list, as in past years. Cedar has been, and probably will be for some time, the most popular wood for telegraph, telephone and other pole lines. Although the purchases in 1912 show a decrease, wood for this purpose need not be specially strong or hard, as there is little or no mechanical strain to be endured. Durability in contact with the soil, lightness, and a slender tapering form are most essential, and cedar seems to fit those requirements better than any other native wood used in an untreated state. The use of the British Columbia species of cedar (Thuja plicata) has increased in the last few years, with the decrease in the supply of poles of the eastern species in the greater length classes. While these poles are not so strong nor so durable as those of eastern cedar, they can be obtained in greater lengths, and the source of supply is more easily accessible. The two species of cedar together formed over 85% of the total. Balsam fir was reported for the first time in 1912. It is being used more and more each year for all purposes, especially in the Maritime Provinces, where the supply of pine is beginning to fall below the demand. As far as form and lightness are concerned, this should make excellent pole material, if its lack of durability were made up for by some preservative treatment. Increases are to be noted in the use of western cedar, tamarack, spruce and chestnut, with balsam fir added to the list, and decreases in the use of eastern cedar, jack pine, Douglas fir and hemlock. No poles were reported in 1912 of red, white or yellow pine.

The average prices given in tables are based on the cost at point of purchase, and may or may not include transportation charges. Only in the case of those woods which are used in large quantities can the values given be taken to represent the relative value of the wood. The average value of poles in 1912 was $1.83, an increase of only 3 cents over 1911. A slight increase was recorded in the case of eastern cedar, and other increases to be noted are in the value of spruce and jack pine poles. All other kinds of wood decreased in value, and the balsam fir reported in 1912 was valued at an average below the general average for 1911.

Steam railways, telephone and telegraph companies reported the purchase of 549,560 poles in 1912, an increase of 5.4% over the total for 1911, and is evident in the cases of western cedar, tamarack and the newly added material, balsam fir. All other woods show a decrease in number, although Douglas fir and chestnut were added to the list of woods purchased by steam railways. The average value of $1.51 per pole is an increase from 1911. The average values of poles purchased by this class of pole line companies is always less than with the electric railway, power and light concerns, as the steam railway and telephone companies are usually closer to the source of supply and purchase their poles in greater quantities. They also use more poles of the shorter length classes. These companies used all the poles purchased of balsam fir, tamarack, jack pine, Douglas fir and chestnut. They purchased 90.3% of all the poles used.

The electric railway, power and light companies purchased a total of 58,996

TABLE 1

KIND OF WOOD	1911 Number	1911 Value	1911 Average Value	1911 Per Cent	1912 Number	1912 Value	1912 Average Value	1912 Per Cent
TOTAL OF ALL USES								
Total	585,703	$1,056,277	$1.80	100.0	608,556	$1,113,524	$1.83	100.0
Cedar	463,234	746,854	1.61	79.1	378,369	613,580	1.62	62.2
Western Cedar	72,354	216,444	2.99	12.4	144,222	408,472	2.83	23.7
Balsam Fir					38,000	30,400	0.80	6.2
Tamarack	28,226	40,410	1.43	4.8	36,158	46,822	1.29	5.9
Spruce	8,764	8,983	1.02	1.5	9,127	10,334	1.13	1.5
Jack Pine	3,318	2,986	.90	0.6	1,790	2,710	1.51	0.3
Douglas Fir	7,906	29,994	3.79	1.3	612	994	1.62	0.1
Chestnut	150	788	5.25	*	228	147	0.64	*
Hemlock	555	936	1.69	0.1	50	65	1.30	*
Red Pine	156	2,054	13.17	*				
White Pine	68	728	10.71	*				
Yellow Pine	30	280	9.33	*				
Unspecified	942	5,820	6.18	0.2				
STEAM RAILWAYS, TELEPHONES AND TELEGRAPHS								
Total	521,572	$ 764,398	$1.47	89.1	549,560	$ 830,793	$1.51	90.3
Cedar	422,588	595,880	1.41	81.0	341,240	462,965	1.36	62.1
Western Cedar	57,597	112,234	1.95	11.0	122,925	278,846	2.27	22.4
Balsam Fir					38,000	00,400	0.80	6.9
Tamarack	28,213	40,394	1.43	5.4	36,158	46,822	1.29	6.6
Spruce	8,577	8,730	1.02	1.6	8,567	7,869	0.92	1.6
Jack Pine	3,318	2,986	.90	0.6	1,790	2,710	1.51	0.3
Douglas Fir					612	995	1.63	0.1
Chestnut					228	147	0.64	*
Hemlock	555	936	1.69	0.1	40	40	1.00	*
Red Pine	156	2,054	13.17	*				
White Pine	68	728	10.71	*				
Unspecified	500	456	91	0.1				
ELECTRIC RAILWAYS, POWER AND LIGHT								
Total	64,131	$ 291,879	$4.55	10.9	58,996	$ 282,731	$4.79	9.7
Cedar	40,646	150,974	3.71	63.4	37,129	150,615	4.06	62.9
Western Cedar	14,757	104,210	7.06	23.0	21,297	129,626	6.09	36.1
Spruce	187	253	1.35	0.3	560	2,465	4.40	0.9
Hemlock					10	25	2.50	*
Douglas Fir	7,906	29,994	3.79	12.3				
Chestnut	150	788	5.25	0.2				
Yellow Pine	30	280	9.33	*				
Tamarack	13	16	1.23	*				
Unspecified	442	5,364	12.14	0.7				

* Less than one tenth of one per cent

TABLE 2

KIND OF WOOD	Number	Value	Average Value	Per Cent.	Number	Value	Average Value	Per Cent
	Total All Length Classes				20-25 Feet (66.1 Per Cent.)			
Total	608,556	$1,113,524	$1.83	100.0	402,407	$ 436,583	$1.08	100.0
Cedar	378,369	613,580	1.62	62.2	263,440	255,508	0.97	65.5
Western Cedar	144,222	408,472	2.83	23.7	60,785	102,638	1.69	15.1
Balsam Fir	38,000	30,400	0.80	6.2	38,000	30,400	0.80	9.4
Tamarack	36,158	46,822	1.29	5.9	32,160	41,267	1.28	8.0
ruce	9,127	10,334	1.13	1.5	7,148	5,607	0.78	1.8
Jack Pine	1,790	2,710	1.51	0.3				
Douglas Fir	612	994	1.62	0.1	612	994	1.62	0.2
Chestnut	228	147	0.64	*	222	129	0.58	*
Hemlock	50	65	1.30	*	40	40	1.00	*
	26-30 Feet (21.1 Per Cent.)				31-35 Feet (7-8 Per Cent.)			
Total	128,228	310,663	2.42	100.0	47,559	190,634	4.01	100.0
Cedar	70,087	165,892	2.37	54.7	27,893	100,143	3.59	58.6
Western Cedar	50,594	132,168	2.61	39.5	19,439	90,082	4.63	40.9
Balsam Fir								
Tamarack	3,771	5,147	1.36	2.9	227	409	1.80	0.5
Spruce	1,976	4,721	2.39	1.5				
Jack Pine	1,790	2,710	1.51	1.4				
Douglas Fir								
Chestnut								
Hemlock	10	25	2.50	*				
	36-40 Feet (3-4 Per Cent.)				40 Feet and Over (1.5 Per Cent.)			
Total	20,937	112,648	5.38	100.0	9,425	62,996	6.68	100.0
Cedar	12,325	58,089	4.71	58.9	4,624	33,947	7.34	49.1
Western Cedar	8,612	54,559	6.34	41.1	4,792	29,025	6.06	50.8
Balsam Fir								
Tamarack								
Spruce					3	6	2.00	*
Jack Pine								
Douglas Fir								
Chestnut					6	18	3.00	*
Hemlock								

* Less than one tenth of one per cent

[illegible] of all the poles purchased in 1912. This number is a decrease of 5,135, or of over 8% from the total in 1911. These companies used only four kinds of [illegible] western and western [illegible] spruce and hemlock. Hemlock was not reported in 1911 by these companies, and poles of Douglas fir, chestnut, yellow pine and tamarack reported in that year were dropped from the list in 1912. The electric companies as a rule purchase the best class of poles, of the greatest length, and seldom obtain their supply locally. These facts are probably responsible for the high values in the table. The average value per pole of $4.79 is an increase of 24 cents over 1911.

Table 2 gives the details of the poles purchased by all classes of pole line companies, separated according to length [illegible]

Of the total 608,556 poles, 66.1% were from 20 to 25 ft. long, and were valued at $1.15. Over 20% were in the 26 to 30 ft. class, and were valued at an average of $2.42. In the 31 to 35 ft. class, 7.8% of the poles were placed, and these were valued at $4.01. The 36 to 40 ft. poles formed 3.4% of the total at $5.38, and the poles of 40 ft. and over, at a value of $6.68, made up the remaining 1.5%.

Cedar poles formed the bulk of each length class and made up practically all the poles in the greater length classes (36 ft. and over). Tamarack and spruce poles were also used in the greater length classes and formed a large per cent. of the poles between 26 and 35 ft. The jack pine poles were all in the 26 to 30 ft. class, and practically all the poles of Douglas fir, chestnut and hemlock were less than 25 ft. long. The spruce and chestnut poles in the greatest length class (40 ft. and over) were purchased for special purposes and their low prices do not indicate their relative value.

Many of the pole line companies use preservative treatments of different kinds to prevent decay and insect injury. These include impregnation of the butts of the poles with creosote, zinc chloride and other chemicals. In some cases the bark is left on the part of the pole which comes into contact with the soil, and this tends to increase the life with some kinds of wood. Painting the butts of the poles with hot tar or creosote will increase their life by several years. Many companies have found that the increased life which is accomplished by preservative treatment brings about a considerable saving in the annual cost of the upkeep of a pole line. By thorough treatment with preservatives many non-durable woods, such as balsam fir, are being used satisfactorily where their use in an untreated state would not have been possible.

The foregoing bulletin was prepared by the Interior Department's Forestry Branch, R. H. Campbell, Director of Forestry.

Orders by Board of Railway Commissioners.

[illegible] Canadian Railway [illegible] done this.

The dates given of orders, immediately following [illegible] took place, and not those on which the orders [illegible] not issued for a considerable time after the dates assigned to them.

[illegible] July 14.—[illegible] 9, re protection of G.T.R. crossing at King St., [illegible]

[illegible]

19833. July 14.—Authorizing City of Saskatoon, Sask., to build highway across Canadian [illegible]

19834. July 11.—Substituting C. N. Ontario [illegible] over Conklin River, for plan approved under order [illegible]

[illegible] 35-25, w. 4 m., Alta., to be completed within [illegible]

19836. July 18.—Ordering C.P.R. to install im[illegible] cost to be paid out of the railway grade crossing [illegible]

[illegible] type of automatic electric bell, 20 per cent. of [illegible]

[illegible] at mileage [illegible]

[illegible] (C.P.R.) to build [illegible]

[illegible] Branch Lines Co. to build its Tofield-Calgary [illegible]

19844. July 21.—Approving location of G.T.R. station and freight shed to be built at New Lowell, Ont., also proposed rearrangement of track and detail plans of station and freight shed.

[illegible]

19846. 19847. July 14.—Authorizing City of St. Thomas, Ont., to lay 12 in. water main under Pere Marquette Rd. on Wilson Ave., between Ada and Elm Sts., and 18 in. water main under G.T.R. on Hughes St.

19848. July 14.—Authorizing Canadian Copper Co., Copper Cliff, Ont., to build crossing, with gates, over Algoma Eastern Ry., in Lot 11, Con. 4, McKim Tp.

19849. May 30.—Establishing express collection and delivery limits in St. Boniface, Man., and rescinding order 15024, Sept. 15, 1911, in same connection.

19850. July 18.—Ordering Canadian Northern Ry., within 60 days, to install improved type of illuminated electric bell at crossing of Fort William Road, between Fort William and Port Arthur, Ont., 20 per cent. of cost to be paid out of the railway grade crossing fund; speed of trains limited to 6 miles an hour over crossing; and a sign post to be erected at least 250 ft. from crossing, indicating that cars must be kept inside that point, on spur track.

19851. July 22.—Postponing effective date of [illegible] G.T.R. Special Freight Tariff, C.R.C. E.2374, I.C.C. 1660, in Supplements 5 and 3, respectively, and of Rule 33 of C.P.R. Local Freight Tariff, C.R.C. E.2141, I.C.C. E 1288, in Supplements 9 and 6, respectively, until otherwise ordered.

19852. July 21.—Authorizing C.P.R. to build [illegible] its Suffield-Blackie Branch, at grade across highway between Secs. 12 and 13-15, w. 4 m., mileage [illegible]

[illegible] C.P.R. [illegible] G.T.R. [illegible] onto

[illegible] July 17.—Authorizing C.P.R. to move [illegible] crossing from its present position, at or near mileage 50, north of McAdam Jct., N.B., to [illegible]

[illegible] on plan, from G.T.R. side track to one of Pratt & Letchworth Co.'s buildings, Brantford, Ont.; [illegible]

[illegible] through embankment near to leading from barn of D. H. and C. S. Grey, Elizabethtown Tp., Ont.

19857. July 21.—Establishing express collection and delivery limits in Grand Forks, B.C.

19858. July 22.—Disallowing cancellation of stop over arrangement at Outremont, Que., in connection with shipments of grain and grain products from Western Canada, as contained in Supplement 9 to C.P.R. all rail and lake and rail Special Tariff, C.R.C. E.2480, said supplement having been made effective June 19, and suspending, until otherwise ordered, cancellations of stop over arrangements at Toronto, West Toronto, Montreal and Outremont, in connection with shipments of grain, grain products, hay and potatoes, items 22 and 23, of C.P.R. Special Freight Tariff, C.R.C. E.2141, as contained in Supplement 16, effective [illegible]

[illegible] July [illegible]—Approving Moose Jaw Electric Ry. to build single track on High St. West, across C.P.R. Outlook Branch.

19860. July 21.—Authorizing Toronto, Hamilton and Buffalo Ry. to cross, at grade, highway between Lots 26 and 27, Con. 3, Saltfleet Tp., with a passing siding.

19861. July 22.—Authorizing C.P.R. to build spur, for Vermont Marble Co., in Peterboro, Ont.

19862. July 23.—Amending order 19676, June 25, re switching lead at C.P.R. yards, Smiths Falls, Ont.

19863. July 21.—Authorizing Michigan Central Rd. to build weighing scales on side track leading to Canadian Shredded Wheat Co., on Lewis Ave., Niagara Falls, Ont., and approving clearances of bridge over same.

19864. July 21.—Authorizing City of St. Thomas, Ont., to lay 18 in. water main under M.C.R. on Moore St., between Talbot and Centre Sts., and Moore and Mill Sts., and on Mill St. between Centre and Amelia Sts.

19865. July 22.—Approving Great Northern Ry. Standard Passenger Tariff C.R.C. 825, applying a maximum rate of 3c. a mile between stations on its lines as follows:—Brandon, Saskatchewan and Hudson's Bay Ry.; Manitoba Great Northern Ry.; Midland Ry. of Manitoba; Victoria and Sidney Ry., and Victoria Terminal Ry. and Ferry Co.; and temporarily approving, pending judgment in inquiry into rates generally in B.C., tariff applying a maximum rate of 4c. a mile between stations on its lines as follows:—Bedlington and Nelson Ry.; Crows Nest Southern Ry.; Nelson and Fort Sheppard Ry.; New Westminster Southern Ry.; Red Mountain Ry.; and Vancouver, Victoria and Eastern Ry. and Navigation Co.

19866. July 21.—Approving, temporarily, pending judgment in inquiry into rates charged generally in B.C., the G.T. Pacific Ry. Standard Freight Mileage Tariff C.R.C. 17, including and cancelling C.R.C. 15, to apply between stations in B.C., Prince Rupert to Morricetown, inclusive.

19867. July 22.—Approving location of G. T. Pacific Ry. station at Cooking Lake, Alta., mileage 766.1 west of Winnipeg.

19868. July 23.—Extending to Sept. 15, time within which interlocking plant be installed at crossing of Canadian Northern Ry. by G. T. Pacific Ry. at Empire Ave., Fort William, Ont., as required by order 19352, May 22.

19869. July 22.—Approving location of C.P.R. station at Trossachs, Sask.

19870. July 22.—Authorizing Campbellford Lake Ontario and Western Ry. (C.P.R.) to build at grade across Ontario St., Cobourg, Ont., mileage 120.20 from Glen Tay.

19871. July 22.—Authorizing C. N. Ontario Ry. to build across and divert public road under Mississippi River bridge, in Lot 22, Fitzroy Tp.

19872. July 23.—Authorizing C.N. Ontario Ry. to build bridge across Petawawa River (west crossing), Deacon Tp., mileage 159.3 west of Ottawa.

19873. July 23.—Authorizing G. T. Pacific Branch Lines Co. to build highway across its Tofield-Calgary Branch, at mileage 104.5 in North Alberta District.

19874. July 22.—Authorizing G.T.R. to build siding for Farquharson-Gifford Co., Stratford, Ont.

19875. July 22.—Authorizing C.P.R. to build spur for Medina Shale Brick Co. and Streetsville Brick Co., Streetsville, Ont.

19876. July 23.—Authorizing C.P.R. to build spur for Abernethy and Lougheed, in Lot 398, Sec. 12, Tp. 12, Haney, N.W.D., British Columbia.

19877. July 23.—Authorizing C. N. Ontario Ry. to build across public road between Saltfleet and Grimsby Tps., Ont.

19878. July 24.—Amending order 19593, June 16, re C.P.R. bridge 103.7, near Foster station, [illegible]

19879. July 23.—Authorizing C.P.R. to build spur for its Irrigation Department at Brooks, Alta., to be completed within three months.

19880. July 23.—Approving G. T. Pacific Ry. revised location and location of its station grounds, in Sec. 17-43-2, w. 4 m., Alta.

19881. July 22.—Authorizing C. N. Ontario Ry. to build across 14 highways in Saltfleet Tp.

[illegible] C.P.R. overhead highway bridge, at Asylum Side Road, London, Ont.

19883. 19884. July 23.—Authorizing C.P.R. to build bridges, 33.5, near Cavan Station, and 5.75, near Norwood Station, Ont.; 55.8, near Station Rooth, N.B.; 7.1, near Norwood Station, [illegible]

[illegible] Governor [illegible] of lease, June [illegible] Kettle Valley Ry. and C.P.R.

Halifax Ocean Terminals, Intercolonial Railway.

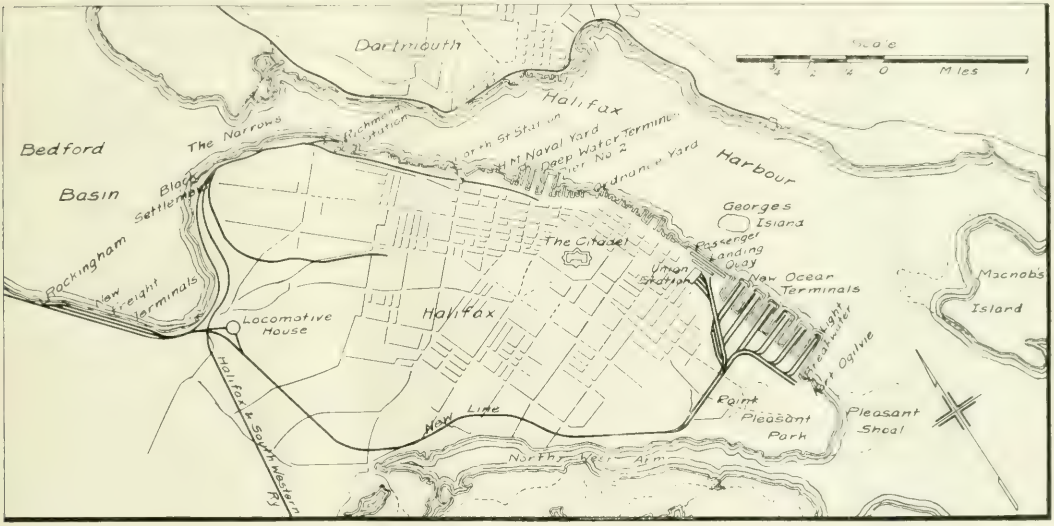
Canadian Railway and Marine World for Jan., 1912, contained an illustrated description of the deep water terminals being built at Halifax, N.S., for the Intercolonial Ry., work on which is still in progress. It, however, became apparent some months ago that these terminals would be altogether inadequate for the port's rapidly growing trade, and the Minister of Railways instructed F. P. Gutelius, M. Can. Soc. C. E., who has since been appointed General Manager, Canadian Government Railways, and F. W. Cowie, M. Can. Soc. C. E., Chief Engineer, Montreal Harbor Commission, to prepare a scheme for more comprehensive terminals, which was adopted. At present Halifax has the Richmond terminals and the "deep water" terminals, the former at Richmond, in the northern extremity of the city, the latter located quite centrally in the city, off Water St. It has been decided to place the new ocean terminals considerably farther out in the harbor at Georges Island Bay near the ocean end of peninsula on which the city is situated.

The terminals, which are intended to be the best equipped on the Atlantic coast, will consist of a passenger landing stage or bulkhead wharf 2,000 ft. long with 45 ft. depth of water at low water of spring tides at which three of the largest ocean vessels can dock in safety without tug assistance; a wharf building the whole length of the bulkhead pier; the first floor of which will be for freight and the second floor for passengers, customs and immigration quarters. Passenger and freight tracks will run alongside the ships. The whole will be laid out so as to give the most expeditious, convenient and economical arrangements for the transfer of passengers, baggage, mails and freight from ship to rail and vice versa. This scheme of development provides for the construction of six freight piers 1,250 ft. long and from 320 to 360 ft. wide, which will be equipped with wharf freight sheds and railway tracks; yards for the storage and shunting of cars, the construction of an elevator which will permit of grain being loaded into ships at each of the 32 berths, a locomotive house for the cars of passenger locomotives and switch engines, and a breakwater from Point Pleasant Park to the Reid rock buoy.

The first unit will consist of a bulkhead pier, the freight and immigration sheds, passenger station, one ship and one freight pier equipped with sheds and tracks together with the necessary accessories, which will provide accommodation for eight of the largest ocean steamships. As soon as business warrants it, two more piers will be constructed, giving an additional capacity for eight such steamships; and in five or six years, or sooner if necessary, upon the opening of the Quebec bridge, provision will be made for a further accommodation of eight such steamships. As business develops and the demands of trade necessitate, the two southerly piers will be constructed, thus completing the scheme. Tenders for the landing quay and the first pier are to be called for at an early date.

The union passenger station, which will be built near the corner of Pleasant and South Sts., will be a handsome and substantial structure, and will be provided with all modern conveniences and facilities for passengers and the handling of baggage, mails, express, etc. The passenger car yard will be situated immediately southwest of and adjoining the union station, and will be of ample capacity and equipped with all necessary supply buildings and up to date facilities.

The ocean terminals will be reached by a branch railway to be built from Rockingham, on the I.R.C., four miles from the North St. station, Halifax, about five miles from the present deep water terminals, and about six miles from the new terminals, which will be situated nearer the entrance to the harbor than any existing wharf. There will be no grade crossings, the railway being carried under the Halifax and South Western Ry., and it [illegible] either under or over all streets and routes by means of bridges, the designs for which will be made to harmonize with their surroundings. The railway has been designed for high speed passenger and heavy freight trains. The maximum curvature will be 4°, and all curves will be laid out with suitable easement curves. The maximum gradient will be 0.6%, compensated 0.04% per degree of curvature. To preserve the appearance of the residential sections of Halifax along the Northwest Arm and in the vicinity of Point Pleasant Park, the railway will be constructed from Quinpool Road to Young Ave. in a cutting of sufficient depth to give clearance for the railway under the overhead bridges, which will carry the streets and roads over the railway. The railway will be double tracked throughout, with additional lead tracks at the yards and terminals. The bridges, culverts and structures will be of permanent construction throughout. The excavations for the railway, which will greatly exceed the embankments, will consist mostly of rock, but there will be no wasting of material. The surplus excavations from the northern end of the railway will fill in and reclaim from Bedford Basin a large and comparatively shallow arm, which will be used for the new freight terminal yard. A suitable site for this yard would otherwise be very difficult to provide, on account of the very hilly nature of the peninsula and surrounding country. This new terminal yard will be open ended and will have standing room for 1,000 cars on body tracks 4,000 ft. long, and it can be readily extended. It will take care of all freight to and from both the old and new terminals, transfer or switching engines only being used between the new yard and the city and harbor terminals. The excess materials from the railway cuttings at the southern end will be used for filling behind the quays and piers which are to be built in the harbor. Selected rock will also be obtained from



Site of Halifax Ocean Terminals and Union Passenger Station, with Double Track Railway to be Built from Main Line at Rockingham.

the cuttings for the construction of the [illegible] [illegible] breakwater, which will extend eastward into the harbor for about 1,500 ft.

The grading of the approach railway and the construction of the terminal yard at Bedford Basin and the breakwater at the harbor, the contracts for which have been let to the Cook Construction Co., of Sudbury, Ont., and Andrew Wheaton, of Amherst, N.S., are to be completed by July 1, 1915.

The expenditure is estimated as follows:—For the first unit, including the five miles of double track railway, between $5,000,000 and $6,000,000; for the completed scheme about $12,000,000.

It is proposed to at once proceed with the construction of the quay walls and of the railway, and with the dock and yard filling, the construction of the necessary overhead bridges and such other works as may be found economically convenient in connection therewith, for all of which it is estimated $2,500,000 will be required during the current fiscal year.

The whole scheme of terminals has been prepared under the direction and supervision of F. P. Gutelius, M. Can. Soc. C. E., General Manager, Canadian Government Railways. F. W. Cowie, M. Inst. C. E., Chief Engineer Montreal Harbor Commission, is Consulting Engineer, and Jas. McGregor, A. M. Inst. C. E., is Superintending Engineer in charge of the work at Halifax.

The deep water terminals, now known as pier 2, which were described in Canadian Railway and Marine World for Jan., 1912, will be completed as per contract and will be used for a year or two for passenger and freight purposes, until the ocean terminals are ready. Then the partitions and other interior fittings of the building will be removed and they will be used for freight purposes only.

Preliminary work was started at Fairview on the line to the new ocean terminals, July 31. The contractors' plant is being delivered and consists of two 100-ton steam shovels, electrically fitted, 50 12-yard air dump cars, four standard locomotives, and two Jordan air spreaders. The contract is being carried out jointly by a combination of the Cook Construction Co. and A. and W. D. Wheaton, the officers being:—President, A. B. Cook, Sudbury, Ont.; Treasurer, Alex. Mackenzie, Barrie, Ont., and St. Paul, Minn.; Secretary and General Manager, H. F. McLeod, Toronto; other directors, A. and W. D. Wheaton, Amherst, N. S. The company's offices are at Halifax, N. S.

Dominion Government Railway to Hudson Bay.

We are officially advised that about 2,000 men are grading, tracklaying, ballasting, etc. Sixty miles of track had been laid to July 29, and it is expected to increase this to about 150 miles this year.

Reports received at Ottawa, Aug. 7, state that from the progress made [illegible] construction there is little doubt that the line will be finished within contract time, viz., Dec., 1914. A Winnipeg press despatch, Aug. [illegible], states that over [illegible] miles will be ready for operation next winter. Seventy miles of grading has been fully completed, and so much work has been done beyond that point that it is expected to connect up the grading [illegible] [illegible] point to [illegible] 150 this year. Track laying was started [illegible] 9 and after putting in the yard tracks and sidings, the gang started out on the main line. The ballasting gang is working close behind the tracklayers.

Work is being pushed ahead on the construction of the terminals at Nelson, on Hudson Bay. Supplies of all kinds, together with dredges and other construction plant have been sent up to the Bay for the work on progress there. (Aug., pg. 378.)

Traffic Orders by the Board of Railway Commissioners.

The dates given for orders are those on which the hearings took place, and not those on which the orders were issued:—

Changes in Freight Classification 16.

19786. July 10. The application of Canadian Freight Association, on behalf of railway companies subject to the Board's jurisdiction, under sect. 321 of the Railway Act, for an order approving of proposed Supplement 1 to Canadian Freight Classification 16, containing certain increased, reduced and additional ratings. Notice of the proposed increased ratings having been given in The Canada Gazette, and the Board having invited consideration thereof by the Canadian Manufacturers' Association, the Montreal Chamber of Commerce, the Ontario Grocers' Guild, and the Boards of Trade of St. John, N.B., Quebec, Montreal, Ottawa, Toronto, Hamilton, Brantford, London, Winnipeg, Brandon, Regina, Saskatoon, Calgary, Edmonton, Vancouver and Victoria; it is ordered that the proposed supplement, as finally revised and submitted for approval by the chairman of the Canadian Freight Association, by letter dated Montreal, July 8, 1913, be approved, to become effective on Aug. 20, 1913.

Modification of C. P. R. and G. T. R. Tariffs.

19851. July 22. Re order 18564, Jan. 25, 1913, directing that the effective date of the modification of rule 7 of the G. T. R. Special Freight Traffic, G. R. C. no. E. 2374, I. C. C. no. 1660, contained in supplements 5 and 3, respectively, thereto, and the modification of rule 33 of the C. P. R. Local Freight Tariff, C. R. C. no. E 2141, I. C. C. no. E 1288, contained in supplements 9 and 6, thereto, be postponed pending a hearing of the matter at the sittings to be held in Toronto on Feb. 7, 1913; and order 19710, June 27, 1913, postponing the effective date of said modification of rules until August 1, 1913. It is ordered that the effective date of the modification of the said rules be further postponed until otherwise ordered by the Board.

Stop Over Arrangements on C. P. R.

19858. July 22. Re applications of the Boards of Trade of Montreal and Toronto, for the disallowance of the cancellations by the C. P. R. of certain stop over arrangements at Toronto, West Toronto, Montreal, and Outremont. It is ordered that the cancellation of the stop over arrangement at Outremont, Que., in connection with shipments of grain and grain products from Western Canada, as contained in Supplement 9 to the C. P. R. "all-rail" and "lake-and-rail" Special Tariff, C. R. C. No. E. 2480, the said supplement having been made effective June 16, 1913, be disallowed. That the cancellations of the stop over arrangements at Toronto, West Toronto, Montreal, and Outremont, in connection with shipments of grain, grain products, hay, and potatoes, items 22 and 23, of C. P. R. Special Freight Tariff, C. R. C. no. E. 2141, as contained in Supplement 16, made effective July 23, 1913, to the said tariff, be suspended until otherwise ordered by the Board.

Great Northern Ry. Passenger Tariffs.

19865. July 22. Re application of Great Northern Ry, under sec. 331 of the Railway Act, for the approval of its standard Passenger Tariff C. R. C. 825. It is ordered that the said tariff, applying a maximum rate of 3 cents a mile between stations on its lines of railway as follows, namely: Brandon, Saskatchewan & Hudson's Bay Ry.; Manitoba Great Northern Ry.; Midland Ry. of Manitoba, Victoria and Sidney Ry., and the line of the Victoria Terminal Ry. and Ferry Co., be approved. That the said tariff applying a maximum rate of 4 cents a mile to be charged between stations on its lines of railway as follows, namely: Bedlington & Nelson Ry., Crows Nest Southern Ry., Nelson & Fort Sheppard Ry., New Westminster Southern Ry., Red Mountain Ry., and the line of the Vancouver, Victoria & Eastern Ry. and Navigation Co. be temporarily approved, pending judgment in the inquiry into the rates charged generally by railway companies in British Columbia.

Brick Rates Milton to Toronto.

19973. Aug. 1. Re application of Milton Pressed Brick Co., and Toronto Pressed Brick and Terra Cotta Co., of Milton, Ont., complaining of an increased rate proposed to be charged by the G. T. R. and C. P. R. on brick, in carloads, from Milton to Toronto, from 3 to 3½ c. per 100 lbs., as shown by Supplements issued by the railway companies to become effective Aug. 1, 1913. It is ordered that the effective date of the said proposed increased rate be postponed until Nov., 1913.

Switching Charges and Practice.

On Feb. 4 last the Board gave notice that it would take into consideration the proposed revision of order 4988, July 8, 1908, known as the General Interswitching Order, and of the draft revision suggested by the Board at the sittings held at Ottawa Nov. 5, 1912. At the sittings subsequently held a general discussion took place, but no definite conclusion was arrived at by the railway companies as to their position; and the Board has now asked them to make their written submission on the whole question both as to practices and rates. In addition to the question of interswitching, many complaints have been received by the Board as to the local switching practices an charges. The Board also requires the submissions of the companies as to what rules and practices should be followed and charges made for services of this character at all points of sufficient magnitude on the lines of the respective companies to necessitate a local switching movement. As some of the objections raised by the companies as to switching movements of both kinds are based on insufficiency of the toll, the Board desires the submissions of the companies to indicate the principle that, in the opinion of the companies, should be observed in arriving at a rate basis, supported by particulars of cost the companies are put to in illustrative movements.

The Board of Railway Commissioners will on Sept. 16, take into consideration the matter of requiring railway companies to equip locomotives with air hose on the front end.

Great Northern Railway Lines in Canada.

The Midland Ry. of Manitoba made application recently to the Winnipeg City Council for permission to lay tracks on a lane between Spruce and Clifton streets, which was granted on condition that another avenue be provided for the traffic. The question of building a spur line adjacent to Sherbrooke St., between Ross and Elgin Avenues, is before the Public Utilities Commissioner.

Projected Lines in Alberta.—A press report from Calgary, Alta., credits a construction superintendent of the Great Northern Ry., with stating Aug. 7, that the G.N. Ry. interests had a route surveyed for a line from Nelson, B.C., to Lethbridge, Alta., and that construction would be gone on with during 1914.

Vancouver, Victoria and Eastern Ry. and Navigation Co.—Construction is being gone on with on the uncompleted portion of the line westerly to the summit of the Hope Mountains, and it is expected to have the line finished to that point during 1914. From this point to Hope the company will use jointly with the Kettle Valley Lines, the section which is being built by the latter company down the Coquihalla River Valley the contract for which has been let to McArthur Bros., New York. From Hope the company runs over a portion of the Canadian Northern Pacific Ry., and its own lines into New Westminster, Vancouver and a connection with the G.N. Ry. lines in the U. S.

The details of the False Creek plans are being worked out by the engineers of the G. N. R., the Canadian Northern Pacific Ry. and the British Columbia Government, and the various portions of the work are being put in hand as rapidly as possible.

Victoria and Sidney Ry.—We are officially advised that the G.N.R., having settled all matters previously at issue with the city of Victoria and the British Columbia Government regarding the bond issue of the V. and S. Ry., is now engaged improving its physical condition, putting in a great many new ties, and tie plates, and a large quantity of ballast. A steel gasoline-electric car has been purchased, and is working three round trips daily between Victoria and Sidney. An order has been placed for the building of a new barge with a capacity of nine cars, to supplement the 6-car barge now in service between the railway and Port Guichon, on the Vancouver, Victoria and Eastern Ry. (Aug., pg. 379.)

Railway Rolling Stock Notes.

The Victoria and Sidney Ry., a subsidiary of the Great Northern Ry., recently purchased a steel gasoline electric car from the General Electric Co., which it is now running three trips a day between Victoria and Sidney, B.C.

The G. T. Pacific Ry. has received one mail and express car, no. 116; 6 baggage cars, nos. 426 to 429, 431 and 432; and 10 sleeping cars, named Cork, Carlisle, Ceylon, Cumberland, Cardigan, Capetown, Clyde, Cyprus, Cornwall and Connaught.

The proceeds of a recent issue of £1,500,000 notes by the G.T.R. will be applied in part to the payment of additional rolling stock, viz:—75 locomotives and 8,000 freight cars, the contract price for which exceeds £2,000,000. This additional equipment has become necessary owing to the approaching completion of the G.T.P.R., and the general increase of traffic throughout the system.

The C.P.R., between June 12 and July 30, placed orders for additional rolling stock at its Angus Shops, as follows:—1 second class car, 1 mail and express car, 1 pile driver, 1 box baggage car, 1 freight refrigerator car, 7 stock cars, 7 vans, 2 horse cars 72 ft. long, and 8 horse cars 60 ft. long.

The Canadian Northern Ry., between July 16 and Aug. 15, received the following additions to rolling stock:—200 box cars from the Canadian Car and Foundry Co.; 4 second class cars and 80 flat cars, from the Crossen Car Co.; 5 consolidation and 5 switching locomotives, from the Canadian Locomotive Co.; 2 consolidation locomotives, from Canadian Allis-Chalmers Co., and 20 cabooses from the Mount Vernon Car Co.

The Esquimalt and Nanaimo Ry., which has been operating oil burning locomotives over its lines for some months, has found a considerable saving in operating, but the full benefit has not been felt yet owing to the heavy expense of installing the tanks and adapting the locomotives for oil fuel. It is stated that forest fires have been avoided this year and considerable economy achieved owing to the elimination of forest patrols.

The Canadian Car and Foundry Co., between July 14 and Aug. 15, received orders for the following rolling stock:—from the Hart-Otis Car Co., 1 Rodger double plough, and 19 fifty ton all steel special Otis type general service cars, the latter being for the Algoma Steel Corporation, details of which were given in our last issue; from Cape Breton Coal, Iron and Ry. Co., 30 thirty ton twin hopper cars; from Algoma Steel Corporation, 19 fifty ton steel underframe flat cars.

All C.P.R. locomotives, with the exception of two, operating on the Mountain and Shuswap Subdivisions, between Field and Kamloops, B.C., are now using oil as fuel, instead of coal The remaining two will shortly be converted to oil burners. The first oil burning locomotive has been placed in operation on the Cascade Subdivision, between North Bend and Vancouver, and the other locomotives operating over that subdivision will be converted as soon as possible.

The Canadian Car and Foundry Co., between June 15 and Aug. 15, delivered the following rolling stock:—to Canadian Northern Ry., 13 forty ton wood ballast cars, 332 thirty ton wood box cars; to Canadian Pacific Ry., 1,509 forty ton box cars, 301 forty ton steel underframe flat cars, 300 fifty ton ballast cars, 5 wood tourist cars, 122 forty ton steel underframe stone cars, 15 wood baggage and express cars, 6 plough cars, 14 steel underframes for Lidgerwood unloaders; to the Dominion Bridge Co., 1 pair of seventy-five ton trucks; Hart-Otis Car Co., 1 plough car; to F. H. Hopkins and Co., 1 all wood Lidgerwood flat car; to St. Lawrence Bridge Co., 4 pairs of fifty ton trucks.

The C.P.R., between June 12 and July 30, received the following additions to rolling stock:—113 freight refrigerator sleeping cars, 2 baggage and express cars sleeping cars, 2 bagage and express cars and 16 class U3 locomotives, from its Angus Shops; 1,139 steel frame box cars, 234 steel frame flat cars, 323 ballast cars, 141 stone cars, and 8 tourist cars, from the Canadian Car and Foundry Co.; 500 steel frame box cars, from the National Steel Car Co.; 232 steel frame box cars, from the Nova Scotia Car Works; 4 ballast spreaders, 2 wrecking cranes and 9 Rodger ploughs, from F. H. Hopkins and Co.; 1 Bucyrus plough from Mussens Ltd.; 4 class G2 locomotives, from the Montreal Locomotive Works; 10 sleeping cars, from the Pullman Co.; 714 box cars, from Barney and Smith Car Co.

The Canadian Northern Ry. has received 10 six wheel switching locomotives, one of which is equipped with power reverse gear, from the Canadian Locomotive Co. Following are the chief details:—

[illegible]	[illegible]
[illegible]	[illegible]
Wheel base, engine and tender	39 ft. 4½ ins.
Heating [illegible]	[illegible]
Heating [illegible]	[illegible]
Heating [illegible]	[illegible]
Driving [illegible]	[illegible]
Driving wheel centres	Cast iron.
Driving [illegible]	[illegible]
Cylinders, dia [illegible]	[illegible]
Boiler, type	[illegible]
Boiler, pressure	180 lbs.
Tubes, no. and diar.	186—2 ins.
Tubes, length	[illegible]
Brakes	Westinghouse American.
Weight of tender, loaded	86,000 lbs.
Capacity, water	3,500 galls.
Capacity, coal	[illegible] tons
Tank, type	[illegible]
Truck, type	Arch bar with steel bolsters.
Wheels, diar	33 ins.
Wheels, type	[illegible]
Journals	[illegible] by 8 ins.
Brake beam	Steel trussed

Among the Express Companies.

The Canadian Northern Ex. Co. has opened offices at Polwarth and Beadle, Sask.

The Board of Railway Commissioners has established express delivery and collection limits for Grand Forks, B.C., and has re-defined the limits for St. Boniface, Man.

The American Ex. Co. has made a distribution of Wells Fargo & Co. shares, 45,000 of which it has held for some years, among its shareholders at the rate of one share of Wells Fargo to each four shares of A. E. Co. stock. The market value of the stock is about $5,000,000.

The Interstate Commerce Commission has ordered considerable reductions in express rates in the U.S., to become effective on or before Oct. 15. It is stated the reductions will aggregate about 16% of the companies' gross earnings. The order is to be in force for two years, to give opportunity for test of the rates under varying conditions. It is stated that the companies have suffered the loss of considerable traffic of smaller parcels through the introduction of the parcel post system, and that such a sweeping reduction of rates will be intolerable.

Railway Lands Patented.—Letters patent were issued during June, covering railway lands in Manitoba, Saskatchewan, Alberta and British Columbia, as follows:

	Acres
Alberta Central Ry.	[illegible]
Calgary and Edmonton Ry.	1,266.00
Canadian Northern Ry.	[illegible]
Canadian Pacific Ry.	500.31
Grand Trunk Pacific Branch Lines Co.	32.78
Manitoba and North Western Ry.	[illegible]
Qu'Appelle, Long Lake and Saskatchewan Rd. and Steamboat Co.	4,642.40
Total	7,743.62

A consolidation of the Railway Act will be one of the matters to occupy the attention of the Dominion Parliament next session. The measure has been in preparation during the past year by S. Price, K. C., St. Thomas, Ont. A draft of the proposed measure is reported to have been completed and to be under consideration.

Canadian Pacific Railway Company's Annual Report.

Following is the 32nd annual report over the signature of the President, Sir Thos. G. Shaughnessy:—

The accounts for the year ended June 30, show the following results:

Gross earnings		$139,395,699.98
Working expenses		93,149,825.83
Net earnings		$ 46,245,874.15
Net earnings of steamships in excess of amount included in monthly report		1,245,563.03
		$ 47,491,437.18
Deduct fixed charges....		10,876,352.15
Surplus		$ 36,615,085.03
Deduct amount transferred to steamship replacement account..	$1,000,000.00	
Contribution to pension fund...............	125,000 00	
		1,125,000 00
		$ 35,490,085 03
From this there has been charged a half yearly dividend on preference stock of 2%, paid April 1..............	$1,473,386 53	
And three quarterly dividends on ordinary stock at 1¾ %, each, paid Jan. 2, April 1, and June 30..........	10,150,000 00	
And interest on instalments on New stock stock subscriptions, paid Oct. 15..........	569,813.87	
		$ 12,193,200.40
		$ 23,296,884 63
From this there has been declared a second half yearly dividend on preference stock, payable Oct. 1..........	$1,486,626.79	
And a fourth quarterly dividend on ordinary stock of 1¾ %, payable Oct. 1..............	3,500,000 00	
		$ 4,986,626.79
Leaving net surplus for the year....		$ 18,310,257.84

In addition to the above dividends on ordinary stock, 3% was paid from special income

DETAILS OF SPECIAL INCOME FOR YEAR

Balance at June 30, 1912...............	$2,460,790 60
Interest on cash proceeds and on deferred payments for land sold.............	2,031,785.05
Interest on deposits and loans..........	1,201,906.69
Interest on C.P.R. 1st mortgage bonds acquired..........................	63,461.33
Interest from Minneapolis, St. Paul & Sault Ste Marie Ry. bonds..........	159,720.00
Interest from Mineral Range Ry. bonds	50,160.00
Interest from Toronto, Hamilton & Buffalo Ry. bonds....................	10,840.00
Interest from Kingston & Pembroke Ry. bonds............................	8,565.00
Interest from Dominion Government bonds...........................	182,500.00
Interest from Ontario Government bonds	48,000 00
Interest from British Consols..........	114,569.44
Interest from Montreal & Atlantic Ry. bonds, and on other securities........	552,298.89
Interest from Berlin, Waterloo, Wellesley & Lake Huron Ry. bonds...........	17,040 00
Dividend on St. John Bridge & Ry. Extension Co stock....................	75,000.00
Dividends on Dominion Express Co. stock............................	240,000 00
Dividends on Minneapolis, St. Paul & S.S.M. Ry. common stock...........	890,645.00
Dividends on Minneapolis, St. Paul & S.S.M. Ry. preferred stock...........	445,326.00
Dividends on West Kootenay Power & Light Co. common stock.............	33,000 00
Dividends on West Kootenay Power & Light Co. preferred stock............	3,850.00
Dividends on Toronto, Hamilton & Buffalo Ry stock..................	164,246 00
Net Revenue from company's coal mines	305,237.93
	$9,058,941.93
Less—Payments to shareholders in dividends: Oct. 1, 1912, Jan. 2, April 1 and June 30, 1913...............	5,700,000 00
	$3,358,941 93
From this a dividend has been declared, payable Oct. 1....................	1,500,000 00

The working expenses were 66.82% of the gross earnings, and the net earnings 33.18% as compared with 64.89 and 35.11%, respectively, in 1912.

Four per cent. consolidated debenture stock for £1,938,394 was created and sold, and of the proceeds £1,051,619 was applied to the construction of authorized branch lines, and £886,775 to the acquisition of bonds of other railway companies whose lines constitute a portion of your system, the interest on which had, with your sanction, been guaranteed by your company. Four per cent. preference stock for £1,569,091 was created and sold, the proceeds being used to meet capital expenditures that had your previous sanction.

Your guarantee of interest was endorsed on 4% consolidated bands of the M., St. P. and S. S. M. Ry. Co. for $2,623,000, issued and sold to cover the cost of 131.15 miles of railway added to that company's system.

During the year 474,798 acres of agricultural land were sold for $7,487,268, an average of $15.77 an acre. Included in this area there were 7,944 acres of irrigated land which brought $48.88 an acre, so that the average price of the balance was $15.20 an acre.

Shares of ordinary capital stock for $2,000,000, the difference between the capital stock outstanding and the amount authorized by the shareholders Oct. 7, 1908, were sold in the market early in the year and realized a premium of $2,860,821.80, which will be used for additions and improvements to your property.

In pursuance of your policy of building and extending branch lines in Western Canada to provide present and incoming settlers with transportation facilities, a line is projected from near Swift Current, on your main line in Saskatchewan, in a northwesterly direction to cross your Lacombe branch at or about Coronation, and eventually to reach Sedgewick, a station on your line between Saskatoon and Edmonton, 290 miles. The first 115 miles of this line should be constructed without delay, and the balance in stretches as circumstances may seem to warrant; two other lines, one of which will run northwesterly from Bassano, on your main line in Alberta, to a connection with the Swift Current line, 118 miles, and the other from Gleichen to Shepard, 40 miles, should be built within the next year. These lines will serve important agricultural districts north and south of your main line and will answer all the purposes of a second track between the points mentioned for some years to come. The Weyburn branch, running south of, and parallel to, your main line in Saskatchewan and Alberta, to a connection with your Alberta railway south of Lethbridge, 436 miles, of which 196 miles have been constructed, or are in process of construction, under your authority, should be further extended year by year until completed. Branch lines from Gimli, Man., in a northerly direction for 26 miles, and from Snowflake, Man., in a westerly direction, 9 miles, and an extension of the Suffield branch in Saskatchewan, 27 miles, will be of substantial service to settlers in these respective districts. Your directors will ask you to sanction the construction of such part of this mileage as you have not already authorized, and the issue, from time to time, of the requisite 4% consolidated debenture stock to meet the expenditure.

Among the important additions and improvements now in process of execution are, 29 miles of second track between Islington and Guelph Jct., on the Ontario Division, to cost $750,000; 133 miles of additional second track between Sudbury and Port Arthur, on the Lake Superior Division, to cost $5,300,000; 178 miles of additional second track between Brandon and Calgary, to cost epproximately $5,000,000; 18 miles of second track and grade improvements, including a double track tunnel, five miles long, between Six Mile Creek and the Loop, near the summit of the Selkirk Mountains, at a cost, without electrification, of about $8,000,000; 139 miles of second track between Revelstoke and Vancouver, in stretches where it will give the most immediate relief, to cost $6,350,000. When this work is finished and the new lines between Regina and Shepard, to which reference has already been made, are constructed, there will be 200 miles of double track between Sudbury and Port Arthur, leaving 352 miles to be provided in the future; between Port Arthur and Calgary there will be 1095 miles of double track, leaving gaps aggregating only 165 miles, and between Calgary and Vancouver 158 miles of double track, leaving 488 miles to be built hereafter. A second track on such a large portion of your main line between Sudbury and the Pacific Coast will relieve the congestion that has prevailed from time to time and will enable you to handle your traffic more expeditiously and economically, and the construction of the long tunnel, between Six Mile Creek and the Loop, will eliminate 4½ miles of snowsheds that it would be necessary to reconstruct at very great expense if the present location of the railway through that section were adhered to. It is not the intention of your directors to proceed with the second track in the more difficult sections along the Thompson and Fraser Rivers until your Kettle Valley Line is ready for traffic between Midway and Hope, in 1915, so that you may have an alternative route available between Medicine Hat and Vancouver via the Crowsnest Pass if anything unforeseen should occur during the prosecution of the double track work to obstruct traffic on the main line.

You will be asked to approve the purchase of two intermediate steamships for the Atlantic trade, 500 ft. long, 64 ft. beam, 11,600 gross tonnage, 15 knots speed, to cost approximately £300,000 each, and two steamships for the Pacific Coast service, 395 ft. long, 54 ft. beam, capable of making 22½ knots an hour at sea, and to cost approximately £200,000 each. The two Atlantic steamships are urgently required for your second and third class passengers and freight traffic between European ports and Canada, and the two fast passenger steamers for the Pacific Coast will further improve the excellent service that you are now providing for the large and growing passenger business between Vancouver, Victoria and other ports on the Pacific Coast.

When the last issue and sale of ordinary capital stock was authorized by you, a portion of the proceeds of the sale was directed to be applied to the retirement of the outstanding 5% first mortgage bonds of the company that mature in 1915, and, therefore, your directors deemed it desirable to give notice to the holders in May last that the company would receive and pay for any of the bonds that might be surrendered before the end of the fiscal year. Pursuant to this notice bonds to the amount of £4,234,700, or $20,608,873.33, were delivered and paid for. These, with the bonds that the company had previously acquired, make a total of £4,487,900, or $21,841,113.33, that have been retired and cancelled, leaving outstanding bonds to the amount of £2,703,600, or $13,157,520, to be redeemed and cancelled as opportunity offers.

For the convenience of those desiring to make transfers in Montreal of shares of your ordinary capital stock, the Bank of Montreal has been appointed Registrar and the Royal Trust Company has been appointed Transfer Agent for the Montreal Registrar, and a bylaw giving effect to the appointments will be submitted for your consideration and approval.

It will be observed that the mileage covered by the statement of gross earnings and working expenses has increased from 10,983 in 1912 to 11,602 in this fiscal year. The business of a number of these new lines will naturally add but little to your gross income for a time while traffic is being developed, but meantime their maintenance and operation have a marked effect on the working expenses. This, coupled with more liberal expenditure for maintenance of way and of equipment and advances in the wage scale in some branches of the service, will account, in a large measure, for the abnormal increase in your working expenses over the previous year.

The item Railway and Equipment in the balance sheet is $69,491,729.27 more than it was in 1912, after applying upwards of $10,000,000 from surplus account. Of this amount $30,137,885.86 represents the cost of additional rolling stock, $9,113,050.21 the expenditure for the construction of branch lines, $36,809,675.82 for additions and improvements to your property, and $3,126,347.32 for additional shops and machinery over the whole system.

CONDENSED BALANCE SHEET

ASSETS

Railway and equipment		$452,320,780 60
Ocean, lake and river steamships		23,049,283 21
Acquired Securities (cost)		100,207,933 88
Properties held in trust for the company		4,386,260 00
Deferred payments on land and town site sales		44,499,115 78
Advances to lines under construction		13,750,205.47
Advances and investments		12,072,811 65
Material and supplies on hand		18,628,206 99
Current assets:		
Agents and conductors balances	$4,118,739.47	
Net traffic balances	120,713.25	
Miscellaneous accounts receivable	7,013,831 74	
		11,253,284 46
Temporarily invested in Government securities		10,088,734.86
Cash in hand		30,274,848 30
		$720,531,465 20

NOTE.—In addition to above assets, the company owns 6,287,250 acres of land in Manitoba, Saskatchewan and Alberta (average sales past year $15.77 an acre), and 1,697,994 acres in British Columbia.

LIABILITIES

Capital stock		$200,000,000 00
Payments on subscription to new issue capital stock (60,000,000.00 at 175)		63,451,667 50
4% preference stock		74,331,339.79
4% consolidated debenture stock		163,257 224.32
Mortgage bonds:		
First Mortgage, 5%	34,998,633.33	
Less amount redeemed and cancelled	21,841,113.33	
		30,511,302.73
Algoma Branch, 1st mortgage		3,650,000 00
Current liabilities:		
Audited vouchers	14,785,322.70	
Pay rolls	6,549,901.24	
Miscellaneous accounts payable	9,176,078 79	
		13,157,520 0
Algoma Branch, 1st mortgage		30,511,302.73
Current lsabilities:		
Audited vouches(	14,785,322.70	
Pay rolls	6,549,901.24	
Mis. accounts payable	9,176,078.99	
		30,511,302 73

Interest on funded debt [illegible]		
Coupons due July 1, 1913 [illegible] not presented	1,208,016 [illegible]	
Accrued fixed charges	183 [illegible]	
		1,391 [illegible]
Equipment obligations		[illegible]
Equipment replacement fund		2,425,426 02
Steamship replacement fund		5,061 [illegible]
Appropriation for additions and improvements		17,912,996 41
Reserve fund for contingencies		3,569,163 37
Lands and town sites Sale		63,334,285 19
Surplus		77,597,100 36
		$720,531,465.20

FIXED CHARGES FOR YEAR

1st mortgage bonds 5% due July 1, 1915	$1,749,931 66
St. Lawrence & Ottawa Ry. 4% 1st mortgage bonds	38,933 34
Man. S. West. Colzn. Ry. 1st mortgage 5% bonds due June 1, 1934	127,200 00
Toronto, Grey & Bruce Ry. rental	140,000 00
Ontario & Quebec Ry. debenture stock 5%	975,129.56
Ontario & Quebec Ry. ordinary stock 6%	120,000 00
Atlantic & North West Ry. 1st mortgage bonds due Jan. 1, 1937	323,633.34
Algoma Branch 5% 1st mortgage bonds, due July 1, 1937	182,500.00
New Brunswick Southern R., 1st Mortgage bonds, 3%	15,000.00
Lindsay, Bobcaygeon & Pontypool Ry. 1st mortgage bonds, 4%	20,000.00
Shuswap & Okanagan Ry. 1st mortgage bonds, 4%	49,990.40
Rental, Calgary & Edmonton Ry	218,357.60
Rental, Farnham to Brigham Jct	1,400.00
Rental, Mattawamkeag to Vanceboro	23,800 00
Rental, New Brunswick Ry. system	372,829.74
Rental, Terminals at Toronto	24,459.56
Rentals, Terminals at Hamilton	36,817.60
Rental, Hamilton Jct. to Toronto	42,191.12
Rental, St. Stephen & Milltown Ry	2,050.00
Rental, Joliette & Brandon Ry	5,000.00
Rental, Lachine Canal Branch	939.96
Interest on Montreal & Western Ry	14,733.42
Interest on equipment obligations	54,266.66

4% CONSOLIDATED DEBENTURE STOCK

Interest from July 1, 1912	$6,273,216 64	
Interest from Jan. 1, 1913	71,971.55	
	6,345,188 19	
Less received from subsidy, Northern Colonization R.	8,000 00	6,337,188 19
[illegible]		$10,876,352 15

EXPENDITURES ON CONSTRUCTION—ACQUIRED AND BRANCH LINES

Moosejaw N.W. Branch	$613,147.07
Craven-Bulyea Branch	6,037.40
Virden-McAuley Branch	103,274.05
Stonewall Branch Extension	94.40
Lauder Branch	196,467 44
Weyburn-Lethbridge Branch	2,293,337.5
Langdon Branch Cr.	477.78
Kipp-Aldersyde Branch	61,554.62
Bassano-Irricana Branch	180,911.75
Regina-Colonsay Branch	180,528.82
Estevan-Forward Branch	483,201.34
Waldo-Galloway Branch	25,352.72
Moosejaw S. W. Branch	103,005.72
Wilkie N. W. Branch	74,667.92
Kerrobert N. E. Branch	404,564.95
Wilkie-Anglia Branch	97,092.79
Swift Current S. E. Branch	138,044.03
Swift Current M.W. Branch	1,412,370.58
Boissevain-Lauder Branch	106,134.34
Suffield S. W. Branch	824,817.64
Three Forks-Bear Lake Branch	85,464.23
Gimli-Riverton Branch	28,557.66
Bassano E. Branch	235,884.44
Snowflake W. Branch	8,549.36
Longue Pointe Extension, Montreal	1,115,533.45
Surveys of projected lines	334,933.75
	$9,113,050.21

EXPENDITURE ON ADDITIONS AND IMPROVEMENTS

Quebec to Bonfield:		
Additional sidings, buildings, stations and yards	$157,064 63	
Permanent bridges and improvements of line	239,535 34	
Right of way	550.00	
		$397,149 97
Montreal Terminals		1,970,536.98
Windsor St. Station extension		827,405.66
Double track bridge over St. Lawrence River		306,396.01
Bonfield to Port Arthur:		
Additional sidings, buildings, stations and yards	625,022.79	
Permanent bridges and improvements of line	365,554 08	
[illegible]	2,0[illegible]	
[illegible]	6,0[illegible]	
		[illegible]
Port Arthur to [illegible]:		
Additional sidings, buildings, stations and yards	[illegible]	
Permanent bridges and improvements of line	[illegible]	
Winnipeg station and [illegible]	67,776 36	
[illegible]	259,835 02	
Winnipeg new elevator	347,252 23	
[illegible]	[illegible]	
Fort William terminals, including coaling plant	3,551,126 15	
[illegible]	[illegible]	
Right of way Cr.	[illegible]	
Calgary hotel	1,085,113 11	
		[illegible]
Field to Vancouver:		
Additional sidings, buildings, stations and yards	[illegible] 116 37	
Permanent bridges and improvements of line	584,592 52	
Vancouver terminals	1,302,394 59	
Double tracking	1,787,230 14	
Right of way	783 88	
		4,00[illegible]
Banff Springs Hotel Addition		1,206,[illegible]
Chateau Lake Louise		940,[illegible]
Empress Hotel, Victoria		599,[illegible]
Hotel Vancouver		660,[illegible]
		$25,565,482 69
Branch Lines:		
South Western Branch	$5,537.49	
Stonewall Branch	3,470 57	
Selkirk Branch	6,816 88	
Emerson Branch	8,870 42	
Nakusp and Slocan Branch	416 13	
Revelstoke and Arrow Lake Branch	4,558 66	
Snowflake Branch Cr.	7 55	
Waskada Branch	1 75	
St. Lin. Branch	231 16	
Lake Timiskaming Branch	26,282 49	
MacGregor Branch	765 72	
Mission Branch	16,796 02	
Arcola-Regina Branch	84,674 64	
North Star Branch Cr.	155 60	
Lac du Bonnet Branch	90 88	
Wolseley-Reston Branch	1,119 26	
Lachine Canal Branch	5,621 36	
Toronto-Sudbury Line	346,758.11	
Pheasant Hills Branch	225,357.47	
Souris Branch:		
Additional sidings, buildings, stations and yards	192,368 81	
Permanent bridges and improvements of line	202,488 48	
Right of way	334 65	
Algoma Branch:		
Additional sidings, buildings, stations and yards	66,257 21	
Permanent bridges and improvements of line	33,671 22	
Grade reduction	171,380 04	
Crowsnest Pass Branch:		
Additional sidings buildings, stations and yards	47,297 56	
Permanent bridges and improvements of line	198,388 50	
Right of way	558 78	
Crowsnest Pass Branch:		
McLeod-Lethbridge deviation	403 35	
British Columbia Southern Ry.:		
Additional sidings, buildings, stations and yards	21,040 68	
Permanent bridges and improvements of line	26,312 84	
Right of way	887 85	
Balfour Extension	4,293 29	
Yahk branch	773 97	
		1,703,663 09
Telegraph extensions and additions		269,231 02
Office building, Toronto		429,827 73
Office building, Edmonton		229,417 35
Office building, Saskatoon		184,711 15
Office building, Hamilton		112,980 05
Rented and temporary sidings		245,6[illegible]
Total main line and branches		$28,740,986 75

RECEIPTS

Cash in hand, June 30, 1912		$33,628,819.03
Temporarily invested in Government securities		10,088,734 86
Surplus Revenue	$35,490,085 03	
Special Income	6,598,151 33	
		42,088,[illegible]

[illegible]	[illegible]	
[illegible]	3 457 033 00	
[illegible]	[illegible]	
[illegible]	[illegible]	
[illegible]	[illegible]	
[illegible]	[illegible]	2 765 683 70
[illegible]	[illegible]	[illegible]
[illegible]		112 073 08
[illegible]	10 083 205 01	
[illegible]	[illegible]	
[illegible]	[illegible]	70 395 694 31
[illegible]		7 291 138 50
[illegible]		9 214 735 57
[illegible]		[illegible]
[illegible]	[illegible]	
[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]
		$185 438 361 43

EXPENDITURES

[illegible]	[illegible]	
[illegible]	[illegible]	$ 2,807 288 47
[illegible]	[illegible]	19 000 000 00
[illegible]		569 813 87
[illegible]		[illegible]
[illegible]		[illegible]
[illegible]		[illegible]
[illegible]	[illegible]	
[illegible]	[illegible]	
[illegible]	[illegible]	
[illegible]	[illegible]	
[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	
[illegible] gage bonds	4 832 000 00	
[illegible]	4 441 000 00	
[illegible]	504 000 00	
[illegible]	2 970 000 00	
[illegible]	495 000 00	
[illegible]	[illegible]	
[illegible]	356 500 00	
[illegible]	25 568 00	
[illegible]	54 637 50	
[illegible]	321 20	
[illegible]	924 666 67	
[illegible]	[illegible]	
[illegible]	50 00	
[illegible]	225 000 00	
[illegible]	271 500 00	[illegible]
[illegible] obligations		[illegible]
[illegible]		5 610,775 09
		$150 888 608 55
Deduct		
[illegible]	[illegible]	
[illegible]	1,391 801 22	
[illegible]	[illegible]	
[illegible]	[illegible]	
[illegible]	[illegible]	
	42 959 331 63	
Less amount at June 30, 1912	37 145 501 35	[illegible]
		145 074 778 27
[illegible]		[illegible]
Cash on hand		30 274 848 30
		$185 438 361.43

[illegible]

[illegible]	2 052
[illegible]	[illegible]
[illegible] cars	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	5 414

[illegible]

[illegible]

[illegible]

	1912	1913
[illegible]	[illegible]	[illegible]
Grain bushels	151 731 691	171,952 738
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]

[illegible]

	1912	1913
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]

PASSENGER TRAFFIC

	1912	1913
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]

[illegible]

[illegible]

	1912	1913
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]

[illegible]

[illegible]	[illegible]	[illegible]
Combination cars	3,206 048	2,917,523
[illegible] express cars	46,677,110	42,678,970
[illegible]	160 230 222	145 684 623
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
Total freight cars	777,643 252	724,320 502
[illegible] train mile	6 62	6 83
Freight cars per traffic [illegible]	[illegible]	[illegible]

[illegible]

[illegible]	[illegible]	[illegible]
[illegible]	1,766,982 013	1,610 251 856
[illegible]	155 451	149 549
[illegible]	[illegible]	[illegible]
[illegible]ge amount re- [illegible]	[illegible]	[illegible]
[illegible]	[illegible]	1 94
[illegible] passengers per train [illegible]	72 95	75 53
[illegible]	[illegible]	15 63
Revenue from passen- [illegible]	[illegible]	[illegible]
[illegible] earnings per train [illegible]	[illegible]	[illegible]
Total passenger train [illegible] $	3 724 92	[illegible]

[illegible]

Tons of revenue freight carried one mile	11,242 690 998	10 180 782 322
[illegible] freight carried one mile	1,743 928,157	1,615 529 852
Total tons (all classes) [illegible]	[illegible]	[illegible]
Tons of revenue freight carried one mile per mile of road	989 081	945,519
[illegible] freight carried one mile per mile of [illegible]	[illegible]	[illegible]
[illegible] freight carried one [illegible]	[illegible]	[illegible]
Average amount re- [illegible]	[illegible]	[illegible]
[illegible] revenue freight per [illegible]	[illegible]	[illegible]
[illegible] non-rev freight per [illegible]	[illegible]	[illegible]
Average No of tons of (all classes) freight per train mile	440 24	431 05
[illegible] revenue freight per [illegible]	[illegible]	18 30
[illegible]ght per [illegible]	[illegible]	[illegible]
[illegible]	[illegible]	21 21
[illegible]	[illegible]	14 13
[illegible] $	[illegible]	[illegible]
[illegible] $	[illegible]	[illegible]

[illegible]

[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
	[illegible]

Payment of pension allowances for year..	169,329 16
Balance in cash and investments.......	$681,596 60

Number on Pension Roll at June 30.

Under 60 years of age..................	73
Between 60 and 70 years of age..........	294
Over 70 years of age..................	238
Total..........................	605

Grand Trunk Railway Betterments, Construction, Etc.

Bonded Freight Shed in Montreal.—The company is building a freight shed, 1,200 by 60 ft., for bonded freight at Point St. Charles, Montreal.

At one end will be the office, 60 by 60 ft., giving accommodation for the general, cartage and Customs staff, etc., on two floors, with basement below, in which will be the heating plant, storage room for records and a waiting room for shed laborers.

The building will have concrete foundation up to the floor line of shed with brick walls above, faced with red pressed brick facing. There will be a flat roof, covered with felt and gravel and supported on columns and beams. The office portion will be of fireproof construction.

The shed will have continuous doors along the track side, with glazed steel sashes above, whilst on the other side there will be doors every 15 ft.

At intervals through the building will be travelling cranes, which will be capable of handling a load of 6 tons straight from the cars to the teams on the opposite side of building. Scales for the weighing of freight will also be provided.

A driveway 30 ft. wide will be provided on Wellington St., which will be paved with scoria paving blocks, provision being made at intervals for driveways across the sidewalk.

Track Elevation in Montreal.—The order for the elevation of the G.T.R. tracks in Montreal is reported to have been prepared for issue by the Board of Railway Commissioners. The estimated cost of the work is over $8,000,000, and it may amount to as much as $10,000,000. The only question said to be undecided is the proportion of the cost to be paid by the city. The actual cost of the track elevation is a little over $5,000,000, towards which the city is authorized to contribute $2,500,000, but the company asks for an additional $500,000. The remaining part of the estimated cost of the work is made up of the alteration of terminal facilities to suit the track elevation, and for the building of a new passenger station to replace the present Bonaventure one.

Stratford Station, Yards, Etc.—A start was made, Aug. 8, on the deflection of the Stratford-Buffalo line in connection with the rearrangement of the yards. The Goderich line will also be changed, and it is stated that there is hardly a line in the entire yard that will not be altered before the work is completed. The work on the new station building is being pushed forward, but it is feared that there will be some delay with the stone work, as the quarries at Gananoque are much behind with deliveries. The station building is estimated to cost $60,000. (Aug., pg. 379.)

Alberta and Great Waterways Ry.—Press reports Aug. 13, state that an agreement has been reached between the Alberta Government and the promoters of the A. and G.W. Ry. by which the proceeds of the bond issue now held by the banks will be released.

Canadian Northern Railway Construction, Betterments, Etc.

The question of the Atlantic Coast terminals of the C. N. R. is being discussed in the press at considerable length. On the one hand the probability of the granting of running rights over the Intercolonial Ry. to St. John and Halifax is given credence, while on the other Boston, Mass.; and Portland, Me., are advocated. Sir Donald Mann, Vice President, is reported to have stated, Aug. 12, that the company did not contemplate making Portland its Atlantic terminal. The newspaper reports made a terminal at Boston a part of the Portland terminal The whole question is, however, being given consideration, but there is nothing definite in view at present.

Sir Donald Mann returned east, Aug. 5, from a trip of inspection over the lines under construction in Western Canada. In an interview he stated that the line from Port Arthur easterly giving connection with Montreal and Quebec, via. Toronto, would be opened for traffic by December. On the Canadian Northern Pacific Ry. there were only 80 miles of grading uncompleted, and this line would be finished through from Edmonton to Vancouver by the fall of 1914. The terminals at Port Mann, Vancouver and Victoria were being rapidly pushed forward.

Montreal-Ottawa-Port Arthur Line.—The sections of this line which are being completed for opening this year, are those between Montreal and Hawkesbury, there connecting with the line now in operation into Ottawa, and the line west of Sudbury to Port Arthur. On this latter section a train service is being operated to Ruel, and track has been laid for a considerable mileage beyond. At Obo, some track has been laid easterly, and about 25 miles westerly. About 150 miles of track have been laid easterly from Port Arthur. With the exception of the bridges across the Nepigon River and at the end of Kapuskasing Lake, all the steel bridges on the line have been completed.

The section of the line which will be brought to completion by the end of 1914, or early in 1915, extends from Ottawa to the junction with the Toronto-Sudbury line at Capreol. Construction is being proceeded with. The questions at issue between the company and the North Bay Town Council, are still unsettled, but an early arrangement is hoped for. It is stated that a possible solution for some of the points will be an agreement with the Temiskaming and Northern Ontario Ry. for the use of that railway's station and terminal facilities.

Canadian Northern Ry.—Track is reported to have been laid on what is known as the Fort Rouge cut off at Winnipeg, and it is expected to have it in operation early in September. This cutoff will enable grain trains from the West to go through to the C. N. R. yards at St. Boniface, and to the G. T. Pacific Ry. yards at Transcona, without passing through the Fort Garry terminals. This will relieve the terminals of a large amount of shunting, and consequent delaying of traffic.

The Board of Railway Commissioners has authorized the opening for traffic of the diversion of the Coste Point branch from sec. 21, tp. 11, range 2, east of the first principal meridian.

The extension of the branch now terminating at Bienfait to Estevan, Sask., 9 miles, has been graded, and it is expected to have the steel laid and the ballasting done by Oct. 1. The grading was done by the Western Canada Construction Co.

A plan and book of reference, giving details of route, etc., of the C.N.R. Alaska branch, as located through tps. 25-26, ranges 20-23, west of the third meridian, Saskatchewan, has been deposited in the Land Titles office at Moose Jaw, Sask.

The company's line will enter Moose Jaw, north of the C.P.R. tracks, and will cross the Cousin's siding by an overhead trestle 35 ft. high, according to plans laid before the City Council, which have been approved.

Hugh Sutherland, Executive Agent, C.N.R., Winnipeg, recently stated that the C.N.R and the G.T. Pacific Ry. were planning to erect union stations in every city in Western Canada where the two lines came together.

Every effort is being made to complete the line into Calgary and to have it in operation this fall. It was expected to have the line finished for opening Sept. 1, but there had been considerable delay in the delivery of the steel for the bridges, which had held up construction considerably.

A contract is reported to have been let to John McLeod and Son, Winnipeg, for the erection of a station for the C. N. Western Ry. at Edmonton, at an estimated cost of $40,000.

Canadian Northern Pacific Ry.—Track laying is reported to be in progress westerly in the vicinity of Yellow Head Pass, and grading is in progress right up to the Albreda Summit, to which point the construction is in charge of Mackenzie-Mann and Co.'s Winnipeg staff. The construction from Port Mann to the Albreda Summit is in charge of the Vancouver office. Track has been completed to mileage 86 north of Kamloops, while considerable progress has been made with the work beyond that point.

The Lulu Island branch has been completed and was reported ready for official inspection Aug. 4.

Construction was started Aug. 11 on the first part of the terminal buildings at Port Mann. This will consist of a 15-stall locomotive house, a repair house 140 by 312 ft., and a turntable. The foundation work, which is being done by the Northern Construction Co., necessitates the driving of 2,800 piles. The buildings will be put up by the Imperial Construction Co.

Sir Donald Mann stated on the occasion of his visit to Vancouver, July 26, that a start would be made right away on the filling in and other work on the False Creek terminal site, Vancouver.

Vancouver Island Lines.—In connection with the building of the branch line along the Saanich Peninsula—which is referred to locally as the Patricia branch—notice has been given of the deposit with the Minister of Public Works at Ottawa, of the plans for the trestle bridge and embankment across the Selkirk water to carry the line from the Songhees Reserve to the Selkirk Bridge on the Gorge Road, and also the plans for the railway ferry terminal at the Patricia Bay terminal.

The plans for laying out the Songhees Reserve for terminal purposes have been prepared, and J. Montgomery, of the Imperial Construction Co., was in Victoria, Aug. 10, arranging for the starting of construction. (Aug., pg. 380.)

Mainly About Transportation People.

W. D. REID, President, Reid Newfoundland Co., visited St. John's, Nfld., during August.

D. C. CORBIN, President, Eastern British Columbia Ry., of Spokane, Wash., spent August in Yukon and Alaska.

A. R. CREELMAN, K.C., director, C.P.R., who is visiting in England, expects to return to Canada during September.

Lieut.-Col. J. W. LITTLE, who died at Springbank, London, Ont., recently, was a director of the London and Lake Erie Ry.

G. J. DESBARATS, Deputy Minister of Naval Affairs, rescued a boy who had fallen into the lake at Banff, Alta., recently.

H. P. DWIGHT, President Great Northwestern Telegraph Co., who died in Toronto some months ago, left an estate of $97,546.

A. J. GORRIE, formerly Receiver, Quebec and Lake St. John Ry., Quebec, spent a short vacation during August, at Lake St. Joseph, Que.

GEORGE BURY, Vice President, C.P.R., was the guest of the City of Regina, Sask., recently when he gave his views on handling the grain crop.

R. L. FAIRBAIRN, General Passenger Agent, Canadian Northern Ry., Toronto, and Mrs Fairbairn, were visitors during August, at Lake St. Joseph, Que.

Prof. D. BURNS, formerly a Fellow of the Faculty of Applied Science and Engineering of the University of Toronto, died at Pittsburgh, Pa., July 27.

C. A. HAYES, General Traffic Manager, Canadian Government Railways, was a guest of the Maritime Press Association at St. John, N.B., recently.

A. W. SMITHERS, Chairman of the Board, G.T.R., arrived in Canada towards the end of August on his annual inspection trip over the system.

J. G. ENTWISTLE, Superintendent, District 3, Western Division, Canadian Northern Ry., Edmonton, Alta., has been granted leave of absence for two months.

LORD STRATHCONA has contributed £10,000 to the fund being raised by the Lord Mayor of London, for the acquirement of the Crystal Palace for the nation.

L. H. CURRY, son of Hon. N. Curry, President Canadian Car and Foundry Co., Montreal, was married in England recently to Miss M. S. McKeen, of Halifax, N.S.

Capt. ALEX. CREIGHTON, a former Port Warden of Montreal, and who had been associated with other shipping interests in Montreal and Vancouver, died in London, Eng., Aug. 4.

F. M. SPAIDAL, General Superintendent, C. N. Quebec Ry., and Quebec and Lake St. John Ry., Montreal, with Mrs. and Miss Spaidal, spent the summer vacation at Lake St. Joseph, Que.

ALFRED PRICE, whose appointment as Assistant General Manager, Eastern Lines, C.P.R., was announced in our last issue, arrived in Montreal, Aug. 8, from Calgary, Alta., to take up his new duties.

G. E. GRAHAM, Superintendent, District 2, British Columbia Division, C.P.R., Vancouver, is announced to have resigned to become General Manager of the Coquitlam Terminal Co., Coquitlam, B.C.

J. E. DALRYMPLE, Vice President (Traffic), G.T.R., and G.T. Pacific Ry., has been elected a director of the Northern Navigation Co., as representing the G.T.R. interests, vice W. E. Davis, deceased.

F. H. McGUIGAN, formerly Fourth Vice President, G.T.R., has been appointed to represent that company in the arbitration under the industrial disputes investigation act, respecting wages of track men.

P. B. MOTLEY, Engineer of Bridges, Eastern Lines, C.P.R., Montreal, has been elected a member of the Canadian Society of Civil Engineers' committee to prepare a standard specification on reinforced concrete work.

W. F. TYE, ex-President, Canadian Society of Civil Engineers, who has been visiting in Europe, with his family, for some time, has returned to Canada, and has taken up his residence at the Ritz-Carlton Hotel, Montreal.

D. McNICOLL, Vice President, F. L. WANKLYN, General Executive Assistant, and J. W. LEONARD, Assistant to the Vice President, C.P.R., Montreal made a tour of inspection over the Dominion Atlantic Ry. at the end of July.

A. A. Goodchild,
General Storekeeper, Eastern Lines,
Canadian Pacific Railway.

A. M. NANTON, director, Winnipeg Electric Ry., and associated with a number of other companies, more or less connected with transportation, has been elected a director of the Ogilvie Milling Co., in place of the late Sir Edward Clouston.

Mrs. W. H. Rosevear, wife of W. H. ROSEVEAR, ex-General Car Accountant, G.T.R., Montreal, died at Dublin, Ireland, Aug. 19, following a heart attack. Mr. and Mrs. Rosevear left Canada about two months ago for a trip to Switzerland, Great Britain and Ireland.

G. FERNLEY, formerly City Freight Agent, Canadian Government Railways Toronto, was presented with a gold watch by a number of transportation men, Aug. 11, on his leaving to take up his new duties as Commercial Agent, same system, Montreal.

LORD STRATHCONA celebrated his 93rd birthday, Aug. 6. It is about 75 years ago since he came to Canada, sailing in a vessel which took six weeks on the trip. This was about a year before the first trans-Atlantic steamship made its voyage from England to New York.

W. R. FITZMAURICE was presented with a silver tea service by the I.R.C. staff at Amherst, N.S., Aug. 11, on his leaving there, where he was station agent, for Newcastle, N.B., where he has been appointed Assistant Superintendent, Moncton and Ste. Flavie District, I.R.C.

S. G. TIFFIN was presented with a diamond tie pin at Toronto, Aug. 11, by a number of transportation men, on his leaving there, where he had been General Agent, Canadian Government Railways, to take up his new position as District Freight Agent, Intercolonial Ry., St. John, N.B.

W. DOWNIE, General Superintendent, Atlantic Division, C.P.R., who was recently granted leave of absence for a year, and who is at present touring in Europe, will not, it is reported, resume his duties on the expiry of his leave. It is stated that he has decided to retire, and to take up residence in Vancouver.

T. G. ARMSTRONG, whose appointment as Assistant Master Car Builder, Western Lines, C.P.R., Winnipeg, was announced in our last issue, entered C.P.R. service in 1902, since when he has been, to 1906, foreman at Farnham, Que.; 1906 to Feb. 1, 1908, Car Foreman, Winnipeg; Feb. 1, 1908 to July 3, 1913, General Foreman, Winnipeg.

J. M. GIBBON, who has been appointed General Advertising Agent, C.P.R., Montreal, was born at Udewella, Ceylon, Apr. 12, 1875, and entered C.P.R. service, June 1908, as advertising agent, London, Eng., which position he held to Aug. 10, 1913. Prior to entering C.P.R. service he had engaged in journalism on some of the chief English illustrated weeklies.

H. ELLIOTT, President, Northern Pacific Ry., has been elected a director, and appointed President of the New York, New Haven and Hartford Rd., vice C. S. Mellen, resigned. Effective Sept. 1. It is also announced that he will be appointed Chairman of the Board, as soon as the necessary bylaw creating the position can be passed.

HON. JOHN SHARPLES, who died at Quebec, July 30, aged 65, was, at various times, interested in many transportation companies, having held the following positions,—member Quebec Harbor Commission, director Quebec Bridge Co., director Quebec Ry., Light and Power Co., director Quebec Steamship Co., Vice President, Great Northern Ry. of Canada.

W. P. CLOUGH, heretofore Vice President, Northern Pacific Ry., New York, is reported to have been appointed Chairman of the Board of Directors in charge of the financial administration of the company. It is stated that under this title he succeeds H. Elliott, heretofore President, who has been appointed President, New York, New Haven and Hartford Rd.

ALEXANDER GIBSON, who died at Marysville, N.B., Aug. 14, aged 93, was one of the industrial and railway pioneers of the Maritime Provinces. He built the New Brunswick Ry., now incorporated with the C.P.R., and in conjunction with the late Hon. J. B. Snowball, built the Canada Eastern Ry., between Fredericton and Loggieville, now a part of the Intercolonial Ry.

W. E. FOSTER, whose appointment as Solicitor for Ontario, G.T.R., Montreal, was announced in our last issue, was born at Belleville, Ont., June 27, 1866, and entered the Legal Department, G.T.R., Sept. 30, 1884, as a clerk and student under John Bell, Q.C., General Counsel, Belleville, Ont., later becoming his assistant, and on Mr. Bell's death in 1905, he went to Montreal in a similar capacity, remaining so until Jan. 1, 1910, since when he has been, to July 15, 1913 Assistant Solicitor for Ontario.

G. E. BUNTING, whose appointment as General Western Freight Agent, Allan Line Steamship Co., and Manager, Allan and Co., Chicago, Ill., was announced in our last issue, was born at Toronto, Feb. 8, 1873, and entered transportation service, Sept. 1, 1889, since when he has been, to May 1, 1891, clerk to Division Freight Agent, G.T.R., Toronto; May 1, 1891 to Oct. 1, 1898, clerk, General Office, Lehigh Valley Rd., Buffalo, N.Y.; Oct. 1, 1898, to May 15, 1905, chief claim clerk, Canada Atlantic Ry., Ottawa; May 15, 1905, to June 15, 1913, Travelling Agent, Allan Line, Toronto.

In an automobile accident near Detroit, Mich., on Aug. 9, L. E. Beilstein, until recently General Manager of the Toledo Railways & Light Co., and J. T. Ross, Consulting Engineer of the Northern Ohio Traction & Light Co., and the Lake Shore Electric Ry., and the chauffeur, were killed, and J. F. Collins, Vice President and General Manager of the Michigan United Traction Co., and E. F. Wickwire, Sales Manager of the Ohio Brass Company, Mansfield, Ohio, were seriously injured. Mr. Wickwire had an ankle broken and suffered from severe strain, but is reported to be recovering satisfactorily.

A. E. McMASTER, whose appointment as Commercial Agent, G. T. Pacific Ry., Regina, Sask., was announced in our last issue, was born at Perth, Ont., Oct. 22, 1885, and entered railway service in 1902, since when he has been, to May 1903, in Freight Office, C.P.R., Keewatin, Ont.; May, 1903, to Aug., 1907, various positions, including assistant agent, C.P.R., Port Arthur, Ont.; Aug., 1907, to Aug., 1908, agent and chief clerk to Superintendent, G. T. Pacific Ry., Fort William, Ont.; Aug., 1908, to July 1, 1913, agent and General Agent, G. T. R., G.T.P.R. and G.T.P. Coast Steamship Co., Prince Rupert, B.C.

F. G. ADAMS, whose appointment as Division Freight Agent, G. T. Pacific Ry., Edmonton, Alta., was announced in our last issue, was born at St. John's, Nfld., Apr. 6, 1878, and entered railway service, Sept. 4, 1893, since when he has been, to Dec. 31, 1902, clerk, G.T.R. General Office, Montreal; Jan. 1, 1903, to Mar. 31, 1907, Contracting Freight Agent and Travelling Freight Agent, G.T.R., Montreal; Apr. 1, 1907, to Aug. 31, 1908, Contracting Freight Agent, G.T.R., Winnipeg; Sept. 1, 1908, to July 31, 1911, Travelling Freight Agent, G.T.R., Winnipeg; Aug. 1, 1911, to July 14, 1913, Commercial Agent, G.T. Pacific Ry., Regina, Sask.

A. C. SHAW, whose appointment as General Passenger Agent, Western Lines, C.P.R., Winnipeg, was announced in our last issue, was born at Detroit, Mich., May 12, 1865, and entered railway service in 1880, since when he has been, to 1882, ticket clerk, Great Western Ry., Toronto; 1882 to Mar. 13, 1886, in private business; Mar. 13, to Dec. 1, 1886, clerk, Passenger Department, C.P.R., Toronto; Dec. 1, 1886, to Dec. 1, 1900, clerk, Passenger Department, C.P.R., Montreal; Dec. 1, 1900 to Nov. 1, 1910, General Agent, Passenger Department, C.P.R., Chicago, Ill.; Nov. 1, 1910, to July 1, 1913, Assistant General Passenger Agent, Western Lines, C.P.R., Winnipeg.

W. E. Foster,
Assistant Solicitor, Grand Trunk Railway

C. H. Bowes,
Assistant General Passenger Agent, Lines West of Revelstoke, B.C., Canadian Pacific Railway.

ARTHUR PIERS, who has retired from the position of Manager, C.P.R. Steamship Lines, Liverpool, Eng., on account of ill health, was born in 1851, and was educated in France and England. He entered transportation service in 1870 as clerk in the office of General Manager, Great Western Ry. of Canada, since when he has been, to 1882, secretary, and assistant to General Manager, same road; 1882 to 1889, secretary to General Manager, C.P.R.; 1889 to 1891, in shipping business in London, Eng.; 1891 to 1901, Superintendent, C.P.R. Steamship Lines; 1901 to June, 1903, General Superintendent, C.P.R. Steamships; June, 1903, to Aug. 20, 1913, Manager, C.P.R. Steamship Lines, Liverpool, Eng.

F. M. RUTTER, A. M. Can. Soc. C. E., whose appointment as Assistant Division Engineer, Maintenance of Way, Eastern Division, C.P.R., Montreal, was announced in our last issue, was born at Toronto, Dec. 26, 1880, and educated at Upper Canada College and Toronto University. He entered C.P.R. service, Apr., 1902, since when he has been, to 1904, chainman and rodman, on location surveys and construction, in Ontario and Quebec; 1904 to 1906, Resident Engineer on construction Toronto-Sudbury Line; 1906 to 1907, transitman, Maintenance of Way Department, Montreal; 1907 to 1911, Resident Engineer, Maintenance of Way, Woodstock, N.B.; 1911 to July, 1913, Resident Engineer, Maintenance of Way, Toronto.

R. N. CARD, who has been appointed City Freight Agent, G.T. Pacific Ry., Vancouver, B.C., entered G.T.R. service in Oct., 1899, since when he has been, to Nov., 1902, chief yard clerk, Hamilton, Ont.; Nov., 1902, to Feb., 1904, chief yard clerk, London, Ont.; Feb., 1904, to Aug., 1908, car distributor, Toronto; Aug., 1908, to Nov., 1912, agent, G.T. Pacific Ry., Fort William, Ont.; Nov., 1912, to July 15, 1913, chief clerk, Traffic Department, G. T. Pacific Ry., Vancouver, B.C. During the latter part of July, he suffered from a severe attack of neurasthenia, and went to Winnipeg for medical treatment, under which he improved sufficiently to be able to go to his farm at Asquith, Sask., where he expects to spend the remainder of the summer.

E. E. LLOYD, who has been appointed Auditor of Stores and Mechanical Accounts, C.P.R., Montreal, was born at Great Grimsby, Eng., Sept. 2, 1868, and came to Canada in 1876, settling in Winnipeg. He entered C.P.R. service, Dec. 27, 1887, since when he has been, to June 13, 1894, in various positions in the Stores Department, Winnipeg; June 13, 1894, to Dec. 17, 1897, in charge of pay rolls and labor statistics, same department, Winnipeg; Dec. 17, 1897, to Jan. 31, 1903, chief clerk, same department, Vancouver, B.C.; Feb. 1, 1903, to Nov. 30, 1904, chief clerk to General Storekeeper Montreal; Dec. 1, 1904, to Jan. 14, 1910, chief clerk to Auditor of Stores and Mechanical Accounts, Montreal; Jan. 15, 1910, to July 31, 1913, Assistant Auditor of Stores and Mechanical Accounts, Montreal.

C. H. BOWES, whose appointment as Assistant General Passenger Agent, C.P.R., Vancouver, B.C., was announced in our last issue, was born at Bangor, Me., Mar. 22, 1877, and entered railway service, June, 1896, since when he has been, to 1898, stenographer and clerk to General Passenger Agent, Bangor and Aroostook Rd., Bangor, Me.; 1898 to 1900, chief clerk, same office; 1900 to 1905, chief clerk to Passenger Traffic Manager, same road; 1905 to 1906 Travelling Passenger Agent, C.P.R., St. John, N.B.; 1906, chief clerk to District Passenger Agent, C.P.R., St. John, N.B.; 1906 to 1907, chief rate clerk, Consolidated Steamship Lines, New York; 1907 to 1908, assistant rate clerk, Boston and Albany Rd., Boston, Mass.; 1908 to Aug., 1910, chief clerk, Passenger Department, C.P.R., Vancouver, B.C.; 1911, Passenger

Agent, British Columbia Coast Steamship Service, C.P.R., Vancouver, B.C.; 1911 to July 1, 1913, assistant to General Passenger Agent, C.P.R., Vancouver, B.C.

F. R. PORTER, whose appointment as Assistant General Freight Agent, G.T. Pacific Ry., Winnipeg, was announced in our last issue, was born at Stratford, Ont., June 13, 1875, and entered G.T.R. service, Apr. 23, 1892, since when he has been, to May 1, 1896, clerk and stenographer, Assistant Superintendent's, and Local Freight Agent's offices, Stratford, and London, Ont.; May 1, 1896, to Jan. 31, 1898, clerk, Division Freight Office, Stratford, Ont.; Feb. 1 to Nov. 30, 1898, stenographer to Division Freight Agent, Hamilton, Ont.; Dec. 1, 1898, to July 31, 1899, chief clerk to Division Freight Agent, Stratford, Ont.; Aug. 1, 1899, to Feb. 28, 1901, chief clerk to Division Freight Agent, Hamilton, Ont.; Mar. 1, 1901, to July 31, 1902, Soliciting Freight Agent, Hamilton, Ont.; Aug. 1 to Dec. 31, 1902, Travelling Freight Agent, Hamilton, Ont.; Jan. 1, 1903, to July 10, 1910, Assistant Foreign Freight Agent, Toronto; July 11, 1910, to July 14, 1913, Division Freight Agent, G.T. Pacific Ry., Edmonton, Alta.

WM. ALEX. DUFF, A.M. Can. Soc. C.E., who has been appointed Engineer of Bridges, Intercolonial Ry., Moncton, N.B., was born at Hamilton, Ont., Apr. 20, 1877, and graduated from Toronto University in Applied Science in 1901. During the summer of 1900, he was engaged as Assistant to Engineer on Construction, Toronto, Hamilton and Buffalo Ry., Hamilton, Ont.; and from 1901 to 1902, field draughtsman and acting Resident Engineer, Vancouver, Victoria and Eastern Ry. and Navigation Co., Grand Forks, B.C.; 1902 to 1903, Assistant to Engineer on Construction, G.T.R., Hamilton, Ont.; 1903, draughtsman, Dominion Bridge Co., Montreal; 1903 to 1905, draughtsman and checker, Kenwood Bridge Co., Chicago, Ill.; 1905 to 1907, draughtsman and checker, Canadian Bridge Co., Walkerville, Ont.; 1907 to 1908, chief draughtsman, Bridge Department, National Transcontinental Ry., Ottawa; 1908 to 1913, Assistant Bridge Engineer, National Transcontinental Ry., Ottawa.

A. DAVIDSON, whose appointment as General Agent, G.T.R. System, Prince Rupert, B.C., was announced in our last issue, was born at St. Henri, Montreal, Jan. 29, 1885, and entered railway service, Aug. 22, since when he has been, to Nov. 20, 1901, clerk, Foreign Freight Department, C.P.R., Montreal; Nov. 20, 1901, to Mar. 16, 1903, clerk, Vice President's office (Traffic), C.P.R., Montreal; Mar. 16, 1903, to Aug. 15, 1904, stenographer, General Freight Department, C.P.R., Vancouver, B.C.; Aug. 15, 1904, to Mar. 23, 1905, secretary to Assistant Freight Traffic Manager, C.P.R., Winnipeg; Mar. 23, 1905, to Apr. 1, 1909, tracing, claims, rate and steamship clerk, General Freight Office, C.P.R., Vancouver, B.C.; Apr. 1 to Oct. 1, 1909, chief clerk to Assistant General Freight Agent, C.P.R., Vancouver, B.C.; Oct. 1, 1909, to June 1, 1910, Travelling Freight Agent, Steamship Lines, C.P.R., Vancouver, B.C.; June 1, 1910, to July 15, 1913, [illegible] Freight Agent, G.T.R., G.T. Pacific Ry. and G.T. Pacific Steamship Co., Vancouver, B.C.

JOHN McMILLAN, whose appointment as General Superintendent of Western Lines, C.P.R., Winnipeg, was announced in our last issue, and whose portrait appears in this issue, was born at Liverpool, Eng., Nov. 2, 1866, and entered telegraph service, June 2, 1883, since when he has been, to Mar. 1, 1885, Construction Department from Lake Superior to Laggan, Alta., C.P.R.; Mar 1, to Sept., 1885, Foreman, Telegraph Construction, Government Military Lines in the Northwest during the Riel Rebellion; Sept., 1885, to 1888, on telegraph maintenance, C.P.R., Winnipeg; 1888 to 1895, Maintenance Department, C.P.R.; 1895 to 1896, telegraph operator, C.P.R., Winnipeg; 1896 to 1902, circuit manager, repeater chief and telegraph agent, C.P.R.; 1902 to 1906, Telegraph Inspector, C.P.R., Winnipeg; 1906 to 1907, Assistant Superintendent of Telegraphs, C.P.R., Winnipeg; 1907 to Jan. 1, 1912, Superintendent of Telegraph, Calgary, Alta.; Jan. 1, 1912, to July 1, 1913, Superintendent of Telegraphs, Manitoba Division, C.P.R., Winnipeg.

D. CROMBIE, who has resigned as General Superintendent of Transportation, G.T.R., Montreal, was born at Hamilton, Ont., May 13, 1864, and entered railway service in 1882, since when he has been, to 1887, telegraph operator, G.T.R.; 1887 to 1889, ticket clerk, same road, Chatham, Ont.; 1889 to 1890, dispatcher, same road, London, Ont.; 1890 to 1892, dispatcher, Flint and Pere Marquette Rd., Saginaw, Mich.; 1892 to 1894, car distributor, same road; 1894 to Jan. 1, 1900, Car Service Agent, same road; Jan. 1 to July, 1900, Superintendent Car Service, Pere Marquette Rd., Detroit, Mich.; July, 1900, to 1903, Superintendent of Transportation, same road, Detroit, Mich.; 1903 to Feb., 1907, in commercial business, Feb. to Oct., 1907, Master of Transportation, Middle Division, G.T.R., London, Ont.; Oct., 1907, to Nov. 22, 1910, Assistant to General Transportation Manager, same road, Montreal; Nov. 22, 1910, to Jan. 14, 1913, Assistant to Vice President, Transportation, Maintenance and Construction, same road, Montreal, Jan. 14, to Aug. 1, 1913, General Superintendent of Transportation, same road, Montreal.

A. C. Shaw,
General Passenger Agent, Western Lines,
Canadian Pacific Railway.

National Transcontinental Railway Construction.

It was reported in Ottawa, Aug. 6, that the line from Moncton, N. B., to Levis, had been completed, and it was expected that the Commission would take the balance of the completed mileage over from the contractors about Sept. 30.

Work on the car ferry landing stage at Levis was started, Aug. 10, on the Quebec Warehousing Co.'s site, adjacent to the G.T.R. station. Tracks are being laid to connect with the Quebec bridge, and connection will also be given with the Intercolonial Ry. and the Quebec Central Ry. A contract for dredging at the slip has been let to La Compagnie Generale d'Enterprises Publique, Que., which also has the contract for building the slip. The approximate quantity of material to be removed is 28,000 cubic yards of rock and 2,000 cubic yards of other material.

Temporary tracks have been laid from the north approach of the Quebec Bridge to the Allan wharf, and it is expected that they will be completed to the Champlain Market site in Quebec, Sept. 1.

Tenders are being received to Sept. 2 for the erection of locomotive and car shops at St. Malo, Que.

The work of completing the line between the end of steel west of Quebec, and Cochrane, Ont., is being pushed forward, and it is expected to have the track laid during the winter, and to finish up the bridge building in the spring, so as to have the line fully completed for traffic by August, 1914. The finishing up of the line between Cochrane and Lake Superior Jct., Ont., ie being proceeded with, and M. Donaldson, Vice President, G.T.P.R., recently stated that an announcement would shortly be made as to the taking over of the line from the west to this point. (Aug., pg. 387.)

Grand Trunk Pacific Railway Construction

Track is reported to have been laid to mileage 1166 west of Winnipeg, and to a point east of Smithers, B.C., on the section being built easterly from Prince Rupert. The Board of Railway Commissioners has authorized the operation of traffic between Beament, mileage 195, and Morricetown, mileage 205, on this section.

Work on completion of the Regina boundary branch is being pushed, and the grading of the yards in Weyburn, Sask., the terminus of a branch, is being proceeded with. It is proposed to lay down 7.5 miles of track and to erect station and other buildings. A large steel bridge over the Souris River is in course of erection.

Track laying is reported completed between Regina and Moose Jaw, Sask., and it is expected that steel will be laid for some miles on the grade completed beyond this point before the end of the year.

A train service is in operation to Beiseker, mileage 163 out of Tofield, Alta., to a point 38 miles from Calgary. The ballasting on this 38 miles has not been completed, but it was expected to make an announcement of the date of opening the line into Calgary by Aug. 31. A temporary station will be used pending the completion of the bridge across the Elbow River, which will give access to the site of the former barracks of the R.N.W.M.P., which is being laid out for terminal purposes. (Aug., pg. 387.)

Canadian Railway
AND
Marine World
Established 1898

Devoted to Steam and Electric Railway, Marine, Express, Telegraph, and Railway and Canal Contractors' Interests.
Official Organ of the various Canadian Transportation Associations.
Published on the first of each month.

ACTON BURROWS, LIMITED - Proprietors.
70 Bond Street, Toronto, Canada.

ACTON BURROWS, A.Can.Soc.C.E.
Managing Director and Editor-in-Chief.
AUBREY ACTON BURROWS - Secretary and Business Manager.

Associate Editor - John Keir
Associate Editor - Donald F Keir
Mechanical Editor - Frederick H. Moody, B.A.Sc.

Authorized by the Postmaster General for Canada, for transmission as second class matter, July 3, 1912.

Entered as second class matter, July 25, 1913, at the Postoffice at Buffalo, N.Y., under the Act of Congress of March 3, 1879.

SUBSCRIPTION PRICES, INCLUDING POSTAGE:

TORONTO AND WEST TORONTO POSTAL DELIVERY, $1.25 a year.

To other places in CANADA, and to NEWFOUNDLAND AND GREAT BRITAIN, $1 a year.

To the UNITED STATES and other countries in the Postal Union, except those mentioned above, $1.50 a year, or six shillings sterling.

SINGLE COPIES, 15 cents each, including postage.

The best and safest way to remit is by express money order. Where one cannot be obtained, a post office money order or bank draft, payable at par in Toronto, may be sent. Cheques or drafts not payable at par in Toronto cannot be accepted. Remittances should be made payable to CANADIAN RAILWAY AND MARINE WORLD.

NOTICE TO ADVERTISERS.

ADVERTISING RATES furnished on application.

ADVERTISING COPY must reach the publishers by the 10th of the month preceding the date of publication.

TORONTO, CANADA, SEPTEMBER, 1913.

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Railway Finance, Meetings, Etc.

Atlantic and Lake Superior Ry.—A meeting of holders of participation in the Atlantic and Lake Superior Ry. Trust Fund was held in Montreal, Aug. 20, to agree to an increase of the issue of the prior lien bonds of the Quebec Oriental Ry. from £50,000 to £100,000.

Canadian Northern Pacific Ry.—An issue of £800,000 of 4½% terminal bonds, guaranteed by the British Columbia Government, was floated on the London, Eng., market July 30, and was reported to have been fully subscribed before the advertised time of closing at a premium of ¼.

The Canadian Northern Ry. Co. is reported to have sold $3,500,000 one year 6% notes, guaranteed by the Dominion Government, and secured by the deposit of its debentures with the Government, to W. A. Read and Co. and the Illinois Trust and Savings Bank. The notes are redeemable six months after July 15 at 101 and interest on 30 days notice. It is stated that about half of these notes have been resold in London, Eng., the remainder being disposed of in the U.S.

The absorption of the Winnipeg and Northern Ry. and of the Canadian Northern Ry. Branch Lines Co. by the C.N.R. Co. has been completed, and the several lines owned by these companies, and heretofore operated by the C.N.R., are now definitely owned by the C.N.R. Co.

Canadian Northern Branch Lines Co.—Notice has been formally given that the amalgamation of the C.N.B.L. Co. with the Canadian Northern Ry. has been completed.

Canadian Pacific Ry.—A special interest payment at 7%, or $3.67164 a share, will be paid, Oct. 15, on the first four instalments ($140), from the due date of each instalment to Sept. 30, on the shares of the recent issue of $60,000,000 ordinary capital stock, as represented by certificates of subscription, to holders of record, Aug. 18, who have paid the instalments on or before their due dates. The shares of this issue, when paid in full, will rank with the existing stock for the full dividend accruing for the quarter ending Dec. 31, payable April 1, 1914.

The directors on Aug. 11, declared a dividend of 2% on the preference stock, for the half year ended June 30, and a dividend of 2½% for the quarter ended June 30, on the common stock, the latter being at the rate of 7% per annum from revenue, and 3% per annum from interest on the proceeds of land sales and from other extraneous assets. These dividends will be paid, Oct. 1 to shareholders of record on Aug. 30.

The Royal Trust Co. has been appointed transfer agent, and the Bank of Montreal, registrar, for the company.

Central Ry. of Canada.—The case of the Hon. Jas. Domville against the company to recover $20,000 alleged to be due as commission on the sale of certain bonds and stocks of the company, in England, was before the courts recently on an application by the company to set aside the order granting leave to sue, on the ground that there was no cause for the action in the jurisdiction under the rules, that the cause for action did not authorize the order, and that the endorsement on the writ was defective, and that in any event, the company should be furnished with particulars. The matter was taken under consideration.

Edmonton, Dunvegan and British Columbia Ry.—The dividend on the first mortgage guaranteed 4% debenture stock was paid Aug. 16.

Grand Trunk Ry.—The recent issue of £1,500,000 five year 5% secured notes due Oct. 1, 1918, in London, Eng., was reported oversubscribed. These were issued at 98, and secured by the deposit with the trustee of £2,000,000 Grand Trunk perpetual 4% consolidated debenture stock. The proceeds will be used in part payment for additional rolling stock.

A further £500,000 of similar notes, on the same terms, were issued, Aug. 15, at 98½. At that date the first issue was quoted at 1¾ premium.

Quebec and Saguenay Ry.—The stock and bonds of this company were pledged Feb. 1, 1911, to secure an issue of 13,000,000 francs of 5% 30 year French currency bonds; and in conjunction with the stock and bonds of the Lotbiniere and Megantic Ry. and the Quebec Eastern Ry., were further pledged, May 1, 1912, to secure an issue of 60,000,000 francs of 5% 30 year French currency bonds, issued by the Quebec Ry., Light, Heat and Power Co. The first issue was all taken up, and of the second issue there are outstanding bonds to the value of 10,922,000 francs. A meeting of the holders of these bonds has been called to be held, at the instance of the Quebec Savings and Trust Co. as trustee, in Montreal, Sept. 2, to consider and take action on the registration on the property of the Q. and S. Ry., "of an alleged lien or privilege for the payment of a sum of money due to the contractors in connection with construction work done on the line."

Temiscouata Ry.—Net earnings for June, $5,515, against $8,057 for June, 1912. Aggregate net earnings for 12 months ended June 30, $67,404.

White Pass and Yukon Route.—Aggregate earnings for six months ended June 30, $352,208, against $315,769 for same period 1912.

Union Stockyards at St. Boniface, Man.—The new union stockyards at St. Boniface which are fully described on pg. 418 of this issue, were opened for business Aug. 14, the opening ceremony being performed by the Premier of Manitoba. As stated in the article referred to the sole stockholders are the C.P.R., the Canadian Northern Ry. and the Grand Trunk Pacific Ry., and no stock can be held except by a railway company. The officers and directors are:—President, J. R. Cameron; other directors:—H. H. Brewer, J. Manson; Superintendent, J. W. Buckpitt; Secretary-Treasurer, W. S. Evans. Under the terms of the act and the agreement with the railway companies, one director may be appointed for the purposes of discussion by the Manitoba Government.

The Dominion Power and Transmission Co. has ordered two 50 ft. freight cars from the Preston Car and Coach Co., and two from the Tillsonburg Electric Car Co., to replace those destroyed by fire recently. The company is arranging for the erection of new freight sheds on the same site as were those burnt, the construction of which will probably be done by the company's staff.

The North Pacific Coast Passenger Agents' Association had a conference at Vancouver, B. C., Aug. 6 and 7, W. E. Duperow, General Agent Passenger Department G. T. Pacific Ry., presiding. The next meeting will be held at Seattle, Wash., Oct. 5.

Railway Development

Projected Lines, Surveys, Construction, Betterments, Etc.

Algoma Central & Hudson Bay Ry.—Construction on the completion of this company's line to Hearst on the National Transcontinental Ry. is rapidly drawing to a close. Trains are being operated from Sault Ste. Marie to Franz, at the junction with the C. P. R., 195 miles north of Sault Ste. Marie, and to Michipicoten Harbor and the company's mines, branching off at Hawk Jct. This section was opened for traffic Dec. 1, 1912. North of Franz, grading is entirely completed through to Hearst on the National Transcontinental Ry. Track was laid to Oba at the junction with the Canadian Northern Ontario Ry. in Dec., 1912. This season this section is being ballasted, and by Oct. 1, will probably be taken over for operation. Tracklaying is progressing north of Oba, and steel is expected to reach Hearst by Nov. 1. By that time this section will be practically ballasted also, so that it is quite probable trains will be operating through to Hearst via the A.C. & H.B. Ry. by Dec. 1. Hearst is 295 miles north of Sault Ste. Marie. Oba is 50 miles south, or via the A. C. & H. B. R., it is an even 100 miles between the C. P. R. and the National Transcontinental Ry. By a rather peculiar coincidence this is the shortest distance these two railways are apart over any feasible route for the connecting line anywhere between Quebec and a point west of Fort William. It is also the only place where the Canadian Northern Ry. comes just midway between these railways, hence the A. C. & H. B. R. has secured the shortest and most direct route connecting by a cross line these three transcontinental railways with the Great Lakes. All new work on the line north of Hawk Jct., 164 miles north of Sault Ste. Marie, is constructed on a maximum 0.6% compensated grade with 6 degrees maximum curves. The Superior Construction Co., T. J. Kennedy, President and General Manager, has the contract for the work north of the C. P. R. R. S. McCormick, M. Am. Soc. C. E., is chief engineer and G. F. Horsey is District Engineer, having direct charge of the work on this section.

Burrard Inlet Tunnel and Bridge Co.—The revised estimates of the cost of this projected bridge place its total cost, including $100,000 for contingencies, at over $2,500,000. The municipalities interested in its construction have subscribed $1,500,000 in addition to which subsidies have been voted by the Dominion Government and the British Columbia Legislature. The bridge company which is formed of representatives of the municipalities, decided recently that it is impossible to raise any more money for the bridge in the locality, and to make application to the Provincial Government to take over the project. A delegation from the company waited on the Government, Aug. 4, to discuss the matter. (April, pg. 166.)

Dominion Atlantic Ry.—The work of improving the roadbed of this line, and bringing it up to C. P. R. standard, which has been in progress for a considerable time, is expected to be completed by the end of the year. The bridge work is well forward, and while it is expected to have most of it completed this year, the big bridge between Annapolis and Digby, N. S., will not be finished until the summer of 1914. The building of the substructure for this bridge was delayed considerably owing to the depth to which the foundations of one of the piers had to be carried in order to reach bed rock. (Feb. pg. 83.)

Esquimalt and Nanaimo Ry.—Tracklaying on the extension from McBride Jct., has been completed to the Little Qualicum River, eight miles. At this point an extensive trestle has to be built, for which the material is being taken in. Grading has been completed from this point to the Big Qualicum River, and there is a short piece of grading to be completed thence to Deep Bay. Grading has been completed from Deep Bay to Courtenay, and it is expected that as soon as the Little Qualicum River trestle has been built, everything will be ready for the track layers right through to Courtenay. (Aug. pg. 376.)

Fredericton and Grand Lake Coal and Ry. Co.—Tracklaying on this line between Gibson and Minto, N. B., was completed, July 30. Ballasting and other finishing up work is being pushed forward, and it is expected that the completed line will be taken over from the contractors, Sept. 30. The line is to be operated by the C. P. R., in conjunction with the New Brunswick Coal and Ry. Co.'s line, which has been taken over from the New Brunswick Government. The railway was projected by Sir Thomas Tait, for the development of the coal deposits in the Grand Lake district, and for the purpose of giving another outlet to the coalfields in the Minto district. Sir Thomas, together with D. McNicoll, Vice President, and other C. P. R. officials, made a brief inspection over the line Aug. 4. Mr. McNicoll said after the inspection: "The Gibson-Minto line will be a first class line when the contractors have finished their work and turned the road over to the company. But the other piece of line, known as the New Brunswick Coal and Ry. Co.'s line, which we have taken over from the Government wants a heap of touching up before we can say the same of it. The C. P. R. will use at least 100,000 tons of coal annually from the mines at Minto to start with, and probably as much more as can be produced." (July, pg. 331.)

Intercolonial Ry.—Surveys are being made, we are officially advised, for a reduction gradients between Point Tupper and the Sydney's, N. S., the work being in charge of J. S. O'Dwyer, Assistant Engineer, Moncton, N.B. It is expected to have the surveys completed this fall.

Tenders have been invited for a second track from St. Romuald to Chaudiere Curve, Que., 3.8 miles. There will be a number of small bridges and culverts, and and overhead crossing of the National Transcontinental Ry. There is a second track from Levis to St. Romuald, 4.3 miles. (Aug. pg. 388.)

Kettle Valley Lines.—A contract has been let to McArthur Bros., New York, for the building of the Hope Mountain section of the line, which extends from the summit of Hope Mountain down the Coquihallo River Valley to Hope, 38 miles. The contract calls for the completion of the section by Nov. 1, 1914. The construction involves very considerable rock work and several tunnels, and is estimated to cost about $3,000,000. F. C. Hitchcock, Vice-President and General Manager of the contracting firm, is reported to be in charge of the work, and to have established his headquarters at Hope. This section is to be built by the K. V. Lines, at the joint cost of itself and the Vancouver, Victoria and Eastern Ry., and will be used jointly by the two companies.

Construction on the uncompleted sections of the line is being pushed rapidly forward. It is expected that the substructure for the steel bridge at Trout Creek will be completed Sept. 1. This bridge will be 250 ft. long and will be at an elevation of 190 ft. Its completion will open up for the track-laying gang about 40 miles of completed grading.

The tender was accepted at a conference held, Aug. 6, between representatives of the two companies, the K. V. Lines being represented by J. J. Warren, President; A. McCulloch, Chief Engineer; and the Vancouver, Victoria and Eastern Ry. by J. H. Kennedy, its Chief Engineer, and A. Stewart, Assistant Chief Engineer, Great Northern Ry.

The contractors will start at once building a waggon road at each end of the section, at an estimated cost of $200,000, for the purpose of getting in plant and supplies. In addition to these waggon roads, supplies will be taken by the 13 mile section of the K. V. Lines, now under construction by Twohy Bros., from Coldwater Jct. to the Hope Summit. This junction is the point at which the K. V. lines in the Nicola River Valley connect with the V. V. and E. Ry. from the Boundary and Okanagan districts. The section is to be operated jointly by the K. V. Lines and the V. V. and E. Ry., and at Hope the latter will switch off to its own route via New Westminster, while the K. V. line will go on to a junction with the C.P.R. by a bridge across the Fraser River.

Lake Erie and Northern Ry.—Work on the construction of this line from Brantford, Ont., northerly to Galt, and southerly to Port Dover, is proceeding at a rapid rate. Several hundred men are employed on grading, together with steam shovels, and very nearly half of the grading has been completed. The bridge work is also well advanced.

The Board of Railway Commissioners has approved of location plans of the line from Lorne Bridge, Brantford, station 0 to station 4.50, in Brantford City. (Aug. pg. 376.)

London and Port Stanley Ry.—Press reports state that it is likely that a vote of the ratepayers of London, Ont., will be taken towards the end of September upon the question of the electrification of the L & P.S.R. from London to Port Stanley.

The Elgin County Engineer reported to the Westminster Tp. Council, Aug. 8, that two overhead crossings of the L. & P. S. Ry. were in a dangerous condition. It is claimed that the responsibility for repairing these bridges rests with the Pere Marquette Rd., which operates the line under a lease having only a few months to run. (May, pg. 220.)

Pacific Great Eastern Ry.—It is reported that the Lonsdale estate in North Vancouver, B. C., has been secured as a station and yard site. The estate comprises 65 acres, and is near the Capilano Indian Reserve. The company is, it is said, to spend $100,000 on the property by Dec. 31, 1915, and an additional $400,000 by Dec. 31, 1918. The buildings proposed to be erected include all that are necessary for freight and passenger terminals, and wharves for ocean and coastwise steamers.

It is also reported that the company is negotiating for the purchase from the Government of the Squamish Indian Reserve at the mouth of the Squamish River, near Newport, which has an area of 1,175 acres, of which the company propose to use 675 for yards and terminal purposes.

Construction is reported to be well advanced along the line from near North Vancouver to Newport, and from the end of the old Howe Sound and Northern Ry. to beyond Lillooet. F. C. Gamble, of the Provincial Government Railway Department, returned to Vancouver, recently from an inspection of the Anderson Lake-Quesnel section of the route. On this section the maximum gradient will be 1% owing to difficulties of construction. The line is being located southerly from Fort George, to a junction with the surveys working northerly.

The Premier, Sir Richard McBride, in a recent speech said that at a future date the question of extending the P. G. E. Ry. into the Yukon Basin, would be taken into consideration by the Provincial Government. (Aug., pg. 376.)

Prince Edward Island Ry.—A contract has been let by the Department of Railways, to the Roger Miller and Sons, Toronto, for the erection of the cary ferrv terminals at arleton Point, P.E.I., at an estimated cost of $950,000. The works included in the contract were described in our July issue, pg. 232. (July, pg. 332.)

St. John and Quebec Ry.—Tracklaying has been started on what is known as the St. John Valley Ry., part of this projected railway, and it was expected to have the section from Fredericton to Gagetown, N. B., laid by Aug. 30. Ballasting is to be started at once, and it is expected to have the section completed and ready for operation by Oct. 30.

The Premier of New Brunswick, with various Provincial officers, made a trip of inspection over the northern portion of the line Aug. 8. Construction is well advanced there, and it is expected that track will be laid so as to enable freight traffic to be operated between Woodstock and Centreville by Oct. 1. To enable this to be done a temporary bridge is being built over the Meduxnakeag River. The line between Centreville and Fredericton is expected to be ready for freight traffic by Nov. 1. (July, pg. 332.)

Taber Transit Co.—Fifteen cars of steel rails and a car of spikes were delivered at Taber, Alta., to the order of the company, July 25. The local council asked the company to put up a $75,000 bond to cover liability on property damages, on the route it had applied for, viz., over Kenaston Ave., from the C. P. R. to the mines on the river. It is said that the company will abandon this route and select another one further east, in order to avoid damage to property. The steel rails delivered are 81 lbs. to the yard. Press reports state that the company proposes to build a line from Taber to Ratlaw, and that the C.P.R. has the first right to acquire the undertaking. Following are the officers and directors:—President, J. F. Kramer, Calgary; Secretary Treasurer, R. C. Baker, Taber; other directors W. E. Bullock, Taber; H. Fluck, G. S. Kramer, Philadelphia, Pa.; J. Schiesel, algary; C. G. Gordon, Toronto. (July, pg. 332.)

Timiskaming and Northern Ontario Ry.—The branch line from Iroquois Junction to Iroquois Falls, Ont., is reported to have been completed. (Aug., pg. 377.)

Transportation Appointments Throughout Canada.

[illegible] error in our announcement will confer a favor [illegible]

Canadian Car Service Bureau.—J. REILLY, heretofore Assistant Manager, has been appointed acting Manager, vice J. E. Duval, resigned to enter G.T.R. service. Office, St. Nicholas Building, Montreal.

D'Alton C. Coleman,
General Superintendent, Alberta Division, Canadian Pacific Railway.

A Copony.
Master Car Builder, Western Lines, Grand Trunk Railway.

Canadian Government Railways.—H. H. MELANSON, heretofore Assistant General Passenger Agent, has been appointed General Passenger Agent. Office, Moncton, N.B.

D. A. STORY, heretofore General Freight Agent, Intercolonial Ry., has been appointed General Freight Agent, Canadian Government Railways. Office, Moncton, N.B.

C. F. BURNS, Auditor of Disbursements, Intercolonial Ry., has been appointed Auditor of Disbursements, Canadian Government Railways. Office, Moncton, N.B.

W. H. ESTANO, Auditor of Traffic, Intercolonial Ry., has been appointed Auditor of Traffic, Canadian Government Railways. Office, Moncton, N.B.

F. E. WHELPLEY, Cashier, I.R.C., has been appointed Cashier, Canadian Government Railways. Office, Moncton, N.B.

T. C. BURPEE, M. Can. Soc. C.E., heretofore Engineer of Maintenance, has been appointed Superintending Engineer, and the first mentioned position has been abolished. Office, Moncton, N.B.

H. McM. KILLALY, B.A.Sc., M. Can. Soc. C.E., heretofore Engineer of Surveys, C.P.R., Montreal, has been appointed Engineer of Construction, Canadian Government Railways. Office, Moncton, N.B.

W. R. DEVENISH, A.M. Can. Soc. C.E., heretofore on the staff of the National Transcontinental Ry. Investigation Commission, has been appointed Division Engineer, Canadian Government Railways. Office, Moncton, N.B.

Canadian Northern Quebec Ry., Quebec and Lake St. John Ry.—W. R. BOON, formerly Bridge and Building Master, District 2, Eastern Division, C. P.R., has been appointed Bridge and Building Master, C.N.Q.R. and Q. & L. St. J.R., vice G. Seaman, resigned. Office, Joliette, Que.

Canadian Northern Ry. — I. L. BOOMER, Trainmaster, has been appointed acting Superintendent, District 3, Western Division, during the absence of J. G. Entwistle, on leave for two months. Office, Edmonton, Alta.

Canadian Pacific Ry.—J. M. GIBBON, heretofore Advertising Agent, London, Eng., has been appointed General Publicity Agent, vice W. T. Robson, resigned. Office, Windsor St. Station, Montreal.

Arthur Piers, heretofore Manager of Steamship Lines, Liverpool, Eng., having retired on account of ill health, H. MAITLAND KERSEY, at one time, Agent, White Star Line, New York, has been appointed Manager in Chief, C.P.R. Trans-Atlantic and Trans-Pacific Steamship Lines. All officers connected with the maintenance and operation of the steamships report to him. Office, 8 Waterloo Place, London, En.

E. E. LLOYD, heretofore Assistant Auditor of Stores and Mechanical Accounts, has been appointed Auditor of Stores and Mechanical Accounts, vice A. A. Goodchild, promoted. Office, Montreal.

S. B. McCONNELL, heretofore Assistant Engineer, Montreal, has been appointed Division Engineer, Lake Superior Division, vice J. W. Orrock, promoted. Office, North Bay, Ont.

J. F. RUGG, heretofore Locomotive Foreman, Neudorf, Sask., has been appointed Locomotive Foreman, Minnedosa, Man., vice W. J. Andrews, transferred.

W. J. ANDREWS, heretofore Locomotive Foreman, Minnedosa, Man., has been appointed Locomotive Foreman, Neudorf, Sask., vice J. F. Rugg, transferred.

W. W. WEBSTER, heretofore acting District Master Mechanic, Kenora, Ont., has been appointed District Master Mechanic, Medicine Hat, Alta.

G. MOTH, heretofore Road Foreman of Locomotives, Macleod, Alta., has been appointed District Master Mechanic, District 1, British Columbia Division, vice M. J. Scott, promoted. Office, Revelstoke.

C. A. COTTERELL, heretofore Trainmaster, Vancouver, B.C., is reported to have been appointed Superintendent, District 2, British Columbia Division, vice G. E. Graham, resigned to become General Manager of the Coquitlam Terminal Co. Office, Vancouver.

W. P. MARTIN, heretofore Wharf Agent, Vancouver, B.C., is reported to have been appointed Trainmaster, District 2, British Columbia Division, vice C. A. Cotterell, promoted. Office, Vancouver.

LINCOLN SMITH, heretofore chief clerk to Manager, British Columbia Coast Steamship Service, Victoria, B.C., has been appointed Assistant to the Manager, same service. Office, Victoria, B.C.

E. C. GILL is reported to have been appointed Advertising Agent, London, Eng., vice J. M. Gibbon, promoted.

Duluth, Winnipeg and Pacific Ry.—J. H. ELLIOTT has been appointed Superintendent, vice C. J. Wilson, resigned. Office, Virginia, Minn.

Grand Trunk Pacific Ry.—J. L. HODGSON, heretofore Master Car Builder, Western Lines, G.T.R., Port Huron, Mich., has been appointed Master Car Builder, G.T.P.R. Office, Transcona, Man.

E. HACKING has been appointed Car Foreman at Transcona, vice J. B. Shelton.

R. N. CARD, heretofore chief clerk to Commercial Agent, Vancouver, B.C., has been appointed City Freight Agent, vice A. Davidson, transferred. Office Vancouver, B.C.

The following agents have been appointed:—G.T.P. Jct., Man., D. Miller; Dugald, Man., P. Chausse; Lestock, Sask., M. G. Billings; Bashaw, Alta., D. C. McCready; New Hazelton, B.C., F. A. Wildmayer; Terrace, B.C., J. E. Lalonde; McBride, B.C., L. C. Pearson; Morricetown, B.C., H. H. Boggs.

Grand Trunk Ry.—J. E. DUVAL, heretofore Manager, Canadian Car Service Bureau, Montreal, has been appointed General Superintendent of Car Service, G.T.R. Office, Montreal.

The positions of General Superintendent of Transportation, heretofore held by D. CROMBIE, who has left the service; Superintendent of Passenger Service, heretofore held by F. PRICE; and Superintendent of Freight Service, heretofore held by W. H. FARRELL, have been abolished.

F. PRICE, heretofore Superintendent Passenger Service, has been appointed Superintendent Car Department. Office, Montreal.

J. B. McLAREN, heretofore chief clerk to Auditor of Freight Accounts, has been appointed Auditor of Freight Accounts, vice J. D. McLennan, assigned to other duties. Office, Montreal.

J. D. McLENNAN, heretofore Auditor of Freight Accounts, Montreal, has been appointed a Travelling Auditor. Headquarters, Montreal.

G. BRADSHAW, safety Engineer, Highland, N.Y., has been appointed to introduce the Safety First System on the G.T.R.

T. CUSHING, heretofore Trainmaster, District 3, Montreal Division, Eastern Lines, Richmond, Que., has been assigned to other duties.

J. W. FARRELL, Trainmaster, District 2, Montreal Division, Eastern Lines, Island Pond, Vt., has had his jurisdiction extended over District 3, and his office removed to Richmond, Que.

T. H. MASON has been appointed Trainmaster, District 4, Montreal Division, Eastern Lines, vice A. D. McCarthy, resigned. Office, Montreal.

T. G. Armstrong,
Assistant Master Car Builder, Western Lines, Canadian Pacific Railway.

J. McMillan,
General Superintendent of Telegraphs, Western Lines, Canadian Pacific Railway.

W. H. FARRELL, heretofore Superintendent of Freight Service, Montreal, has been appointed Superintendent, Toronto Terminals, vice G. A. Stokes, assigned to other duties.

G. A. STOKES, heretofore Superintendent, Toronto Terminals, has been appointed Division Agent, Ontario Lines, with jurisdiction over station agents, etc., and such other duties as may be assigned to him, reporting to the General Superintendent. Office, Toronto. This is a new position.

P. C. HEELS, heretofore Roadmaster, Gravenhurst, Ont., has been appointed Supervisor of Track there, vice T. H. Horner, transferred.

W. T. WINDER, heretofore Accountant, G.T.R. and Wabash Rd., St. Thomas, Ont., has been appointed Travelling Accountant, Ontario Lines, G.T.R.

A. COPONY, heretofore Chief Draughtsman, Car Department, Montreal, has been appointed Master Car Builder, Western Lines, vice J. L. Hodgson, transferred to G. T. Pacific Ry. service. Office, Port Huron, Mich.

The following agents have been appointed:—Hemmingford, Que., G. Williamson; Edgington, Que., A. H. Johnston; Gananoque Jct., Ont., V. E. Parker (acting); Uhtoff, Ont., V. H. Fisher; North Bay, Ont., Passenger, J. H. Meighen; Colwell, Ont., L. A. Hill; Thornbury, Ont., H. E. Emery; Winona, Ont., W. W. Langford; Belle River, Ont., C. J. Forrest; Canfield Jct., Ont., W. A. H. Hayes; Welland Jct., Ont., F. J. Foster; Clifford, Ont., W. J. Kyle; Golden Lake, Ont., D. J. Macintosh; Otter Lake, Ont., J. Summervill; Rose Point, Ont., J. J. White.

Intercolonial Ry.—D. M. CONDON, heretofore acting District Passenger Agent, has been appointed District Passenger Agent, Halifax, N.S.

L. S. BROWN, heretofore Assistant Superintendent, Moncton and Ste. Flavie District, Newcastle, N.B., has been appointed Superintendent, Truro, Sydney and Oxford District, vice Y. C. Campbell, assigned to other duties. Office, New Glasgow, N.S.

Y. C. CAMPBELL, heretofore Superintendent, Truro, Sydney and Oxford District, New Glasgow, N.S., has been appointed Claims Agent for the district from Halifax to Sydney. Office, New Glasgow, N.S.

H. H. SCHAEFER, heretofore Division Freight Agent, St. John, N.B., has been appointed Division Freight Agent, in charge of territory in New Brunswick, Moncton, north and east. Office, Moncton, N.B.

R. S. RICHARDSON, has been appointed Assistant Superintendent, Halifax and St. John District, vice H. B. Fleming, transferred. Office, Moncton, N.B.

S. G. TIFFIN, heretofore General Agent, Toronto, has been appointed Division Freight Agent, in charge of territory in New Brunswick, west of Moncton. Office, St. John, N.B.

W. R. FITZMAURICE, heretofore station agent, Amherst, N.S., has been appointed Assistant Superintendent, Moncton and Ste. Flavie District, vice L. S. Brown, promoted. Office, Newcastle, N.B.

H. B. FLEMING, heretofore Assistant Superintendent, Moncton, N.B., has been appointed Assistant Superintendent, National Transcontinental Ry., between Moncton and Edmundston, N.B., which is being operated by the I.R.C.

See also Canadian Government Railways.

Prince Edward Island Ry.—W. T. HUGGAN, Accountant and Auditor, Charlottetown, P.E.I., is reported to have been appointed District Passenger Agent there.

See Canadian Government Railways.

Quebec, Montreal and Southern Ry., Napierville Jct. Ry.—A. L. CURRIE has been appointed Secretary, vice L. J. Beique, resigned.

Canadian Pacific Railway Construction, Betterments, Etc.

Eastern Division.—Considerable progress has been made with the second track work between St. John's and Farnham, Que., and it was reported, Aug. [illegible], to be almost completed, but for the bridge at St. John's. The concrete substructure has been put in, but nothing has been done at the superstructure.

Work is in progress on the erection of the second of the final two large spans on the bridge across the St. Lawrence River at Lachine, Que. As soon as the first of these is placed in position, the second will be ready to be floated out. It is expected the bridge will be finally completed as a double track bridge this fall. An illustrated descriptive article of this bridge appeared in our issue of Feb., 1912, and a further article on pg. 397 of our Aug., 1912, issue.

Campbellford, Lake Ontario and Western Ry.—An original of the mortgage of the line to the Royal Trust Co., as trustee for the bond issue, has been deposited with the Secretary of State at Ottawa.

Construction trains are at work ballasting the line easterly from Agincourt, the ballast being obtained from a new pit near Markham. The work has been practically completed as far as Port Hope. The bridge work east of Port Hope is being pushed forward, and it is expected that everything will be ready for the operation of the line before the end of the year.

Ontario Division.—In connection with the building of the Campbellford, Lake Ontario and Western Ry., which joins the present Montreal-Toronto line at Agincourt, a second track is being built from the point of junction into Toronto. The work involves the building of two new single track bridges over the Don and the West Don respectively, and the reduction of the present gradient between Wexford and Donlands.

A permit has been granted for the erection of a new repair shop at West Toronto, at an estimated cost of $26,000. The contract for the work has been let to John Hayman and Son, London, Ont.

Track laying was started, Aug. 18, west of Islington on the second track being built from that point to Guelph Jct. The grading is fully completed to west of Cooksville. Between this point and Streetsville there are some good sized cuts and fills, on which considerable progress has been made. From Streetsville to Guelph Jct. the work is also well advanced. The concrete work is in a forward state. The whole work will be finished this fall.

Manitoba Division.—The Board of Railway Commissioners has approved of location plans for the extension of the branch line now terminating at Gimli, northerly to Riverton, Man., 26.05 miles.

The Board of Railway Commissioners has approved of location of the Snowflake westerly branch for 9.10 miles from sec. 19, tp. 1, range 9, westerly to sec. 14, tp. 1, range 11.

Saskatchewan Division.—A contract is reported to have been let to Grey and Co., Minneapolis, Minn., for the laying of 3.5 miles of pipe line at Weyburn, Sask., to extend from the Souris River to the C.P.R. yards, and to provide a water supply for the company's purposes. Local press reports state that 20 acres has been purchased at Weyburn, on which to erect divisional shops, etc., on the Weyburn-Lethbridge line.

The second track work between Swift Current and Moose Jaw, Sask., is nearing completion. In connection with this work about 15 miles of additional tracks are being laid in Moose Jaw yards.

Alberta Division.—Press reports state that surveys are being made for a line from near Cottonwood, Mont., northerly to a junction with the Weyburn-Lethbridge line, now under construction, at Mannyberries, Alta. The survey party is reported to have staked a line entering Canada near Wild Horse Lakes, along the Lost River Coulee, and on to the Lake Pakewki flats. Cottonwood is on the Minneapolis, St. Paul and Sault Ste. Marie Ry., and C.P.R. subsidary, and its engineers are reported to have made the surveys south of the International boundary, C.P.R. engineers making the surveys in Canada.

The second track work on the Broadview section has been completed through the Broadview yards, and work has been started on the subway at Tenth Ave. This structure will be of steel and concrete and is estimated to cost $65,000.

Steel has been laid to Skiff, on the Weyburn-Lethbridge Branch, and it is expected that Eudon, 60 miles east of Stirling, will be reached this season. Ballasting trains are being run to Skiff. It is expected that the section of the line under construction westerly will connect up with the section from the east, in the fall of 1914. (Aug., pg. 378.)

Equipment of Locomotives With Steps.—The Board of Railway Commissioners has issued the following circular:—"The Board's inspectors have called its attention to the fact that a number of railway companies subject to its jurisdiction are equipping their locomotives with steps on the front buffer beam, or on the side post of the pilot, in accordance with Interstate Commerce Commission regulations. The Canadian regulations, agreed to by the railway companies and approved by the Board, Feb. 17, 1913, do not require these steps. If, on account of international service, Canadian railway companies feel that it is desirable or advisable so to equip their locomotives in accordance with United States practice, the Board directs that it shall be encumbent upon such railways to see that these steps are kept in good order and repair."

Canadian Freight Association, Western Lines.—At the annual meeting in Winnipeg, Aug. 7, the following officers and standing committees were elected for the current year,—President, W. C. Bowles, C.P.R.; Vice President, G. Stephen, C.N.R.; executive committee, W. C. Bowles, G. Stephen and A. Rosevear; inspection committee, W. G. Manders, G. H. Smith, F. R. Porter, P. H. Burnham; car service committee, A. Hatton, J. P. Driscoll, T. P. White, W. B. Harris; classification committee, W. B. Lanigan, G. Stephen, A. E. Rosevear, W. G. Manders, F. R. Porter, P. H. Burnham, W. C. Bowles.

An Old Subscriber's Appreciation.—John L. Hodgson, who has recently been appointed Master Car Builder, Grand Trunk Pacific Railway, at Transcona, Man., has taken Canadian Railway and Marine World for many years. A short time ago he wrote: "I am very glad indeed to be a subscriber to Canadian Railway and Marine world, for the information it contains is very interesting. I look forward each month to receiving it and enjoy reading it."

Canadian Northern Railway Earnings, Etc.

[illegible] expenses, net earnings, [illegible] or decreases, compared with those [illegible]

	Gross Earnings	Expenses	[illegible]	[illegible]
July	[illegible]	$1,335,100	[illegible]	[illegible]
Aug.	[illegible]	[illegible]	[illegible]	25,100
Sept	[illegible]	1,248,000	[illegible]	4,100
Oct.	[illegible]	[illegible]	705,900	24,000
Nov.	2,509,700	1,631,900	877,800	212,000
Dec.	2,132,000	[illegible]	581,000	[illegible]
Jan.	[illegible]	[illegible]	[illegible]	40,700
Feb.	[illegible]	[illegible]	[illegible]	[illegible]
Mar.	1,685,900	1,254,400	[illegible]	[illegible]
Apr.	1,745,300	1,242,200	[illegible]	[illegible]
May	2,218,400	1,638,200	[illegible]	[illegible]
June	2,178,200	1,635,700	[illegible]	[illegible]
	[illegible]	$16,930,800	[illegible]	[illegible]
Inc.	$3,441,200	$2,508,300	[illegible]	

M[illegible] during the year ended June 30, 4,229, against 3,888 during the previous year.

Approximate earnings for July, $1,928,800, against [illegible].

Canadian Pacific Railway Earnings, Etc.

Gross earnings, working expenses, net earnings, increases or decreases, compared with those for 1911-12, from July 1, [illegible]

	Gross Earnings	Expenses	Net Earnings	Increase or Decrease
July	$12,052,398.58	$7,604,221 68	$4,448,176 90	$745,148.57
Aug.	12,251,715.87	7,533,790.21	4,717,925 66	642,354 65
Sept.	11,579,733 98	[illegible]	4,250,303 85	332,857 05
Oct.	13,060,397.80	[illegible]	5,060,887 19	379,782 44
Nov.	12,362,666 42	8,104,527 38	4,258,139.04	270,772 55
Dec.	12,219,278 72	7,823,559 21	4,395,719.51	289,989 25
Jan.	9,679,607.39	8,017,233.61	1,662,373.78	579,516 08
Feb.	9,747 685.55	7,227,616.21	2,520,069 34	136,202 67
Mar.	11,111,892.78	7,256,475 89	3,855,416.89	137,015 78
Apr.	11,750,913.45	7,805,835 90	3,945,077.55	x170,674 24
May	[illegible]	8,400,949.16	3,504,029 86	176,485 37
June	11,674,430 42	8,046,675 84	3,627,754,58	x218,848 11
	[illegible]	[illegible]	[illegible]	[illegible]
Incr.	[illegible]	[illegible]	[illegible]	

x Decrease.

Approximate earnings for July, $[illegible], against $11,641,000 for July, 1912.

Commencing Aug. 1, the mileage under operation was increased to 11,[illegible].

Grand Trunk Railway Earnings, Etc.

Subject to audit, the accounts for the half year ended June 30, show the following results:—

Gross receipts		$[illegible]
Working expenses		[illegible]
Net receipts		$[illegible]
Deduct debit balance on account of rentals, outside operations and car mileage		[illegible]
Total net revenue		$ 5,266,905
Net revenue charges, less credits		2,589,866
Balance		$[illegible]
Deduct, Canada Atlantic Ry. deficiency	$[illegible]	
Deduct, Detroit, Grand Haven and Milwaukee Ry. deficiency	[illegible]	
		[illegible]
		$[illegible]

This surplus of $1,943,617 added to the balance of $[illegible], from Dec. [illegible], makes a total of $2,005,953 available for dividend, which will admit of the payment of the full dividend for the half year on the 4% guaranteed stock and first and second preference stock, leaving a balance of about $[illegible] to be carried forward.

The accounts of the G.T. Western Ry. for the year ended June 30, after providing for all fixed charges, including the debit balance of $78,621 brought forward from the previous year, show a deficit of $111,280, which is carried forward to the debit of the current half year.

TRAFFIC RECEIPTS OF THE SYSTEM.

Aggregate from July 1 to [illegible]

	1913	1912	Increase
G.T.R.	$[illegible]	$[illegible]	$[illegible]
C.A.R.	[illegible]	[illegible]	[illegible]
G.T.W.R.	[illegible]	[illegible]	[illegible]
D.G.H. & M.R.	[illegible]	[illegible]	[illegible]
Totals	$[illegible]	$[illegible]	$[illegible]

Grand Trunk Pacific Railway Earnings.

The earnings of the Prairie Section and Lake Superior Branch for July, were $519,556.

THE CANADIAN GENERAL ELECTRIC Co., Ltd., has issued a folder on Dossert Connectors, for which it is now agent.

Electric Railway Department.

The Development of the Montreal and Southern Counties Railway.

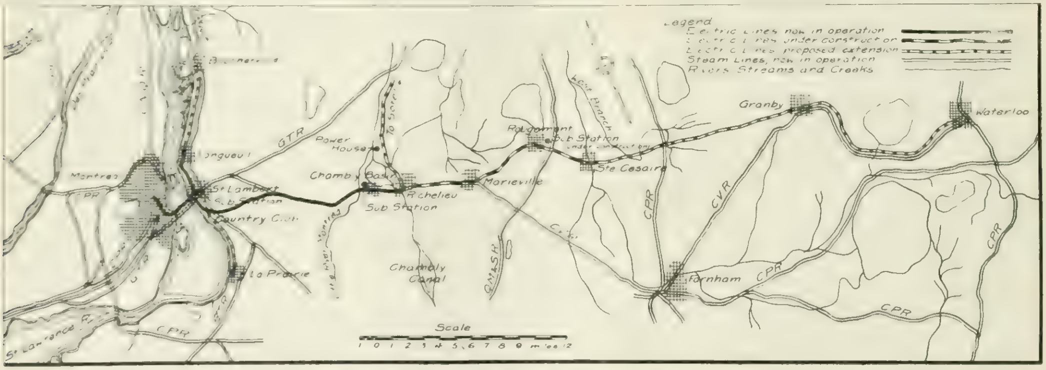
The Montreal and Southern Counties Ry. started operations in Nov., 1909, to give interurban service from Montreal, across the St. Lawrence River, to the southern townships and counties, and in accordance with the company's policy to extend its service in the above suburban districts, under the direction of Bion J. Arnold, of Chicago, it has just completed the rehabilitation of its 600 volt, direct current lines from Montreal, via St. Lambert, to Longueuil and to the Montreal Country Club at St. Lambert, and the extension of them to Richelieu through Chambly and Rouville counties. The company's plans contemplate placing the best procurable facilities at the service of the travelling public and the producers in the territory within a radius of 75 miles from Montreal, and the next points to be reached will be Boucherville, La Prairie, Marieville, St. Cesaire, Granby and Waterloo.

The service hitherto supplied this locality by the previously existing roads, while all that could be expected under the old system of operation, has not been able, perhaps, to entirely meet the demands of the district, which require convenient connection with trains and lowered transportation cost, as well as speed. The character of the territory is recognized as being such as to necessitate this improved service. The agricultural values compare favorably with those in other sections and dairy resources are considerable. Many people from across the St. Lawrence are attracted by the natural beauties of the country and there are already located, either actually or prospectively, desirable industrial plants at certain favorable points.

ROUTE.—From the original Montreal terminal at McGill and Youville Sts., the system has 23.3 miles of track, connecting St. Lambert, Longueuil, the Montreal Country Club, Greenfield Park, Chambly Basin and Canton, and Richelieu. With the additional 26.7 miles on which are next to be included Marieville, Rougemont, St. Cesaire, Abbottsford and Granby, there will be a total of 50 miles in service. Projected lines from Longueuil to Boucherville, 5 miles, from the Country Club to La Prairie, 4 miles, through the counties of Chateauguay and Huntingdon, 50 miles, and from Richelieu to Sorel are yet in a tentative stage.

The line crosses the St. Lawrence River on the Victoria Jubilee Bridge beside the G.T.R. double tracks, and diverges at the east end, the Longueuil branch passing directly through St. Lambert, where are located the car barns and one of the sub stations, while at Front St. the branch to the Country Club and beyond is depressed to pass the steam road.

After passing the G.T.R. over the interlocking crossing at the Country Club, the line is now continuous to Richelieu, which is reached over the Central Vermont Ry.'s right of way, after passing Greenfield Park. About 12 miles of the steam line has been electrified and brought up to the new standard. The intermediate 3 mile stretch between Greenfield Park and the Country Club is entirely new, and has been necessitated by the extensive enlargement of the G.T.R. yards projected at St. Lambert, around which the interurban road has had to pass.



Route and Connections of Montreal and Southern Counties Railways.

At Richelieu the line crosses the Richelieu River and the adjacent Chambly Canal, at which is located the Montreal Light, Heat and Power Co.'s hydro-electric power station.

Beyond Richelieu the Central Vermont Ry.'s existing right of way through Marieville branching to Rougemont and St. Cesaire, 13 miles, will be electrified. The road will be extended by new construction through the mountain district via Abbottsford to Granby, 15 miles.

The right of way into Montreal occupies the Harbor Commissioners' land east of Point St. Charles freight yard, and has been brought within the G.T.R.'s property as far as the pump house on the spill way near Mill St. Traversing the Government property adjacent to Lachine Canal basin, it crosses the latter on Black's Bridge, and thence via Common and Grey Nun Sts. reaches the original Y terminal at McGill St., as permitted by the city legislation of 1908. It is expected this may be revised in the near future to permit carrying passengers to a more convenient terminal on the Place D'Youville.

The structures put up for the interurban electric railway include at present the following buildings:—Sub stations at St. Lambert and Chambly; passenger stations at Montreal, St. Lambert and Longueuil; car barns at St. Lambert; shelters at waiting stations other than the stations mentioned.

The situation and requirements of this interurban electric system are such that power from the Montreal Light, Heat and Power Co.'s plant, in the neighborhood of the Richelieu River, can be used to good advantage, and, accordingly, sub stations have been located at two points about 14 miles apart on the interurban line. With continuity of power service and reasonable rates assured, simplification by the elimination of an individual power house is obviously a considerable advantage.

The site of the Chambly Basin sub station is not far from the hydro-electric power plant. The building is 34 ft. 10 ins. by 42 ft. 4 ins. inside, with concrete foundations, floors, sills, coping and roof—the latter a permanent second floor with cinder concrete fill—covered with composition roofing, and supported on steel I beams, a C.I. column and the brick walls. The tower section is 32 ft. high over all.

The sub station in the group of buildings at St. Lambert, similar in construction to the other station, is 50 by 80 ft. inside, with a 20 by 20 ft. balcony room, and a 14 by 20 ft. oil room additional. Steel trusses and columns support the roof.

The original 3 track car barn at St. Lambert, having a capacity of nine 50 ft. cars, has been supplemented by the new 200 by 55 ft. brick structure, to which there are four entering tracks, making the total capacity under cover at present 25 cars. Inspection and repair pits are located under one track in the old barn and two in the new barn.

Here are located also, in a 125 by 30 ft. annex to the new barn, the general offices, dispatcher's headquarters, locker rooms for the crews, and store house.

The principal stations at the Youville St. terminal, Montreal, St. Denis St., St. Lambert, Longueuil, Chambly Basin, Chambly Canton and Richelieu, are supplemented by additional waiting rooms at the junction on Front St. in St. Lambert, Montreal South, and at the Country Club. More shelters will be built at such points as may be required by trafic over the new extension. These stations and waiting rooms are frame structures of the standard interurban road type, to accommodate passengers and express freight.

Within the Montreal city limits the line passes over Lachine Canal on Black's Bridge and then crosses the St. Lawrence River over the 7,000 ft. Victoria Jubilee Bridge, which was erected in 1897 to replace the old square, steel tube, single track structure of the Robert Stevenson design. This is a double track through bridge of 25 Pratt truss steel spans, resting on stone piers, averaging 280 ft., centre to centre, and while erected primarily by the G.T.R. to carry its steam tracks, allowance was also made for the support of 15 ft. driveways on the cantilever ends of the floor beams extending either side of the 30 ft. portals, and upon one of these ways are now accommodated both pedestrians and the electric cars, although the loading of the structure is such as to limit the weights of the 8 ft. 1 in. by 49 ft. 4 in. cars to 65,000 lbs. each. At its centre span the lower chord of the bridge is 24 ft. above those at the end abutments, and at these points the rails are 99½ ft. above the water in Lachine Canal, totalling about 65 ft. at the greatest rail elevation above the St. Lawrence River.

Montreal Terminal Station.

St. Lambert Station.

The 126 ft. steel span over the Little River Montreal, about 10 miles east of St. Lambert, and the 90 ft. steel girder swing bridge at Chambly Canal were first put up for the Central Vermont Ry. The rails on the Chambly Bridge are only 6½ ft. above the canal water, and as there is considerable traffic on the canal, the construction of cross braced wooden towers at either end has been required to complete the overhead circuit, while the two track ends are connected by two bare 350,000 c.m. copper cables laid, as are the lead covered feeder cables across the canal underground.

St. Lambert Sub Station.

Chambly Sub Station.

Just beyond this point the line crosses the 725 ft. Richelieu River wood trussed deck bridge of seven spans, 103 ft. 7 in. centre to centre of piers, erected also by the steam road. There is no traffic to require a swinging section here, and the rails are carried on top of the trusses 29 ft. above normal water level.

CONNECTIONS.—The 8½ miles of track of the company's first lines, extending from Montreal to Longueuil and the Country Club via St. Lambert, are 56¼ in. gauge, using 80 lb. rails, on oak ties and gravel roadbed. Little overhauling has been required on the roadbed, except some reballasting, and owing to the flatness of the country east of the St. Lawrence River, grading and filling have been of small extent, chiefly confined to the 3 miles of Golf Club-Greenfield Park new construction, beyond which the line occupies the Central Vermont track. At St. Lambert car barn the tracks have been relaid to secure more direct entrance to the barns, and passage to the Longueuil Branch. Double track is contemplated between this station and the Front St. junction point. The tracks within the new barn total 800 ft., those in the old, 480 ft., while the yards have about 300 ft. more available for storage, aggregating 1,600 ft. There are considerable stretches of single tangent track, notably one of 7 and two of 2 miles each, on the Central Vermont right of way from Greenfield Park to Chambly Canton and shorter lengths between St. Lambert and Longueuil, the Country Club and Montreal, in all about 65% of the present system.

There are sidings in Montreal at Common St., Riverside St., and the west approach to the Victoria Jubilee Bridge; the one near the Front St. subway, St. Lambert, soon will be included in the double track to connect it with the St. Denis St. siding in front of the car barns. There are also intermediate sidings or turnouts between St. Lambert and those at Longueuil and the Country Club stations, as well as Chambly Canton, Richelieu and Brookline.

The grades are light, nowhere more than about 1½% and averaging 0.305%, not considering the 3½% at the 550 ft. east approach to the Victoria Jubilee Bridge. On this bridge the roadway rises 24 ft. between the end abutments and the bridge centre, a 0.658% grade, 3,500 ft. long on either half. At Grey Nun St., Montreal, the rails are 3½ ft. lower than the surface of Lachine Canal. The Chambly Basin turnout, beside the sub station, is 23 ft. lower than the high water level of Richelieu River. In the 3 miles between the top of the watershed of the St. Lawrence and Richelieu Rivers, and the Chambly Basin level, there is a difference of elevation of less than 50 ft., a mean gradient of 0.15%.

A special interlocking plant has been installed near the Country Club, where the line crosses the G.T.R. main double tracks. This interlocking plant was installed by the Railway Signal Company of Canada, and is unique in being the most complete plant in Canada for protecting an electric railway crossing. The interlocking machine itself is a 24 lever improved Saxby Farmer type, which is housed in a 2 story frame tower building of standard construction, the machine being located on the second floor. The entire plant is according to the Railway Signal Association's latest approved recommended practice. The leadout is of the box crank type, and the signals are all of the upper quadrant type.

All derails on both lines are operated by no. 8 switch lock movement, and the junction switch on the electric line is locked by a facing-point lock. All home interlocking signals are equipped with 2 arms, the lower arm in each case being fixed. Power distance signals are used on the G.T.R. No distance signals are used on the electric line, because track curvature and operating requirements necessitate slow speed movement through the plant. All signals are bolt locked with the derails and switches of the route [illegible] All crossing frogs are of manganese steel.

In addition to the above [illegible] interlocking plant, there is another crossing [illegible] Victoria Bridge. This crossing is controlled by plant which is only interlocking for the electric line. Signals only are [illegible] crossings in Montreal other than the above are such as to necessitate only [illegible] ductors in negotiating them.

On the new constructions were used 60-lb. A.S.C.E. section Dominion rails and [illegible] bars, style D1 were used on the old 56-lb. rails of the Central Vermont Ry., permitting bonding at joint, crossings and turnouts [illegible] when tucked. 2 0 [illegible] copper terminals [illegible] at intervals corresponding [illegible]. The track [illegible] switchboards of sub

[illegible] real over the Victoria Jubilee Bridge. This practically certain source of energy is tapped [illegible] at St. Lambert and [illegible] 14 miles apart, and is transformed in the Montreal and Southern Counties sub stations at these points to lower voltage and converted into 600 volt direct current, which is distributed to the trolley wires over bare aluminum [illegible] Montreal, St. Lambert and the Longueuil and Country Club branches, which originally was supplied from steam power plant in the G. T. R. yards at Point St. Charles, Montreal, is now supplied directly from the St. Lambert sub station.

OVERHEAD CONSTRUCTION.—The overhead construction on the three mile extension of new track through Greenfield Park, as well as the electrification of the Central Vermont Ry. tracks as far as Richelieu, is notable as being the first installation of the catenary type of overhead construction to be built in this part of Canada. The standard type of catenary construction is used throughout, consisting of 7-16 in. Siemens-Martin grade 7 strand galvanized steel mes [illegible] ported on porcelain insulators, which are fastened to 10 ft. T iron brackets attached to the poles. The bracket type of construction is used throughout the line, except over the double track at Richelieu station, Chambly Canton and two short curves near Chambly Canton and through the streets of Greenfield Park subdivision. At these points the messenger wire is supported by cross spans, using ⅜ in. 7 stranded steel cable and pole type porcelain strain insulators. The miscellaneous overhead material is all galvanized or sheradized and was supplied by the Ohio Brass Company. The hard drawn trolley wire was supplied by the E. F. Phillips Electrical Works, the Imperial Wire & Cable Co. and the Canada Wire & Cable Co. Special steel messenger cable was supplied by the Steel Company of Canada. All the overhead construction is hung to allow 22 ft. clearance from the trolley wire to the top of rail along the track, with 23 ft. clearance at railway crossings.

The trolley wire is supplemented along the entire length by bare aluminum feeder, having a conductivity equal to 500,000 c.m. copper cable. This feeder gives a capacity [illegible] ordinary daily requirements, and is installed to take care of such additional [illegible] time.

The feeder cables are supported on [illegible] to the poles with galvanized [illegible]. On all curves the cross arms are double and iron pins are used instead of oak. [illegible] of the cable and at curves to properly anchor the feeder cables.

At each end of every curve and at

[illegible] at Junction With C.V.R.

Tangent Construction at Three Mile Post, C.V.R.

G.T.R. Crossing Near Country Club.

[illegible]

[illegible]

TRANSMISSION.—[illegible]

[illegible]

half mile intervals the trolley and messenger wires are anchored to extra poles and suitably guyed. The trolley is sectionalized in front of the Chambly Basin sub station and midway between Chambly and St. Lambert sub stations, the section breakers being bridged by disconnecting switches attached to the feeder. During normal operation the two sub stations run parallel. The feeder is tapped at every tenth pole with Dossert aluminum and copper cable taps attached to 3|0 weatherproof wire which terminate in fed in ears attached to the trolley wire. Garton Daniels 625 volt lightning arresters are placed on every tenth pole and connected to the feeder taps. It is interesting to note in connection with this overhead work that provision has been made in the fittings, insulators, etc., for the projected future change to high voltage special pantograph connectors and contact wire, which may be used in event of large extensions of the system.

Multiple Unit Train.

Combination Locomotive and Sweeper.

A COMPLETE TELEPHONE DISPATCHING System has been installed, consisting of the Northern Electric and Manufacturing Co.'s selector type of ringing equipment, with dispatcher operator located next to the Superintendent's office in the car barns at St. Lambert. The telephone line consists of no. 11 hard drawn copper wire, supported on pony glass insulators on side brackets, which are attached directly to the poles supporting the trolley. Telephone wires are transposed at intervals of three poles to overcome the induction from adjacent high tension lines.

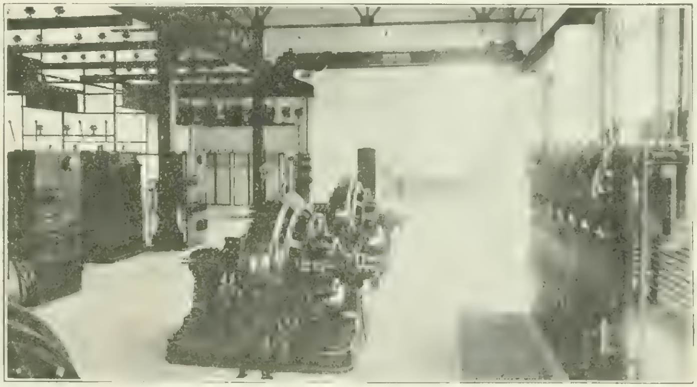
POWER.—The layout of the sub stations has been determined largely by the variation in load on the M.L.H. & P. Co.'s plant at Richelieu. While the voltage supply may vary as much as 12% at Chambly and 4½% at St. Lambert, pressure is maintained practically constant on the interurban system

The interesting problem of power equipment in the sub stations to meet the conditions of line supply has been solved by the installation of a motor generator plant at Chambly and rotary converters at St. Lambert. In addition to the arrangements for present requirements, accommodation for future additions has been made in the walls, foundation space, switch compartments, wiring system, etc.

At Chambly a 6 ft. 4 in. by 13 ft. 2 in. concrete foundation supports the first motor generator unit, and provision is made for a second foundation to support a future additional set. A 600 h.p., 3 phase, 63 cycle, 2,300 volt, 10 pole, wire wound rotary Westinghouse induction motor is driven direct connected to a 400 kw., 600 volt, compound wound, direct current, interpole Westinghouse generator. Power is supplied to the set by three 185 kva. delta connected, oil insulated, self cooled transformers, high tension 24,000 volts, low tension 2,300 volts. Switches and resistance grids are furnished for starting purposes.

The a.c. and d.c. switchboards and the line apparatus, including Northern type A disconnecting switches and air cooled choke coils, both 100 amp. 25,000 volts, the 20-5 amp. Wagner o.w.g. 40, current transformers, the Westinghouse electrolytic lightning arresters, the 100 amp., 22,000 volts 3 phase s.t. condit type circuit breakers, for cell mounting, etc., were supplied by the Northern Electric and Manufacturing Co. An interesting feature peculiar to the connection with duplicate high tension supply is an interlocking device on the oil switch connecting rods back of the a.c. switchboard, installed to prevent paralleling of the M.L.H. & P. Co.'s transmission lines.

For the three rotary converters at St. Lambert there are three concrete foundations 6¾ ft. by 7 ft. 8 ins., and room for two more in the event of increased demand. The use of rotary converters, with their greater efficiency, can be taken advantage of under the conditions obtaining at this point, by special arrangement with the M.H.L. & P. Co. requiring that its lines must not be seriously disturbed in starting up these units. Each converter is 500 kw. capacity, 6 phase, 600 volt d.c., 63 cycles, at 945 r.p.m., 8 pole, compound wound, self starting on the a.c. side from low voltage taps from transformers, and built by the Canadian Westinghouse Co., with shaft extensions to take starting induction motors eventually if needed.


St. Lambert Sub Station.

Connected with each unit are three delta connected, 185 kw., 24,000|428 volt, 63 cycle, Westinghouse transformers, of the same type as installed at Chambly, with 1/3 and ½ voltage taps to be used in starting the rotaries. The disconnecting switches, lightning arresters, choke coils, Wagner current transformers, and the condit oil switches in the unit switch cells, together with the switchboards complete, were supplied by the Northern Electric and Manufacturing Co.

From the a.c. line switches run no. 2|0 B. & S. gauge, bare copper bus bars. From each transformer to a starting panel run two 600,000 cm. main leads and two 300,000 cm. rubber covered, double braided starting taps, and from the a.c. starting panel six 600,000 cm. rubber and lead covered leads are led through three ducts to the machine, while there are similar connections for the positive and negative and equalizer generator leads to the d.c. switchboard. Positive feeder cables from switch on d.c. board to outside of building are 600,000 cm. r.c.d.b., two cables to each feeder panel.

TOOLS.—A 10 ton manually operated travelling crane is a part of the equipment of the St. Lambert sub station. In the repair pits under the track in the new car barns a small hydraulic jack facilitates the removal of motors, etc., from below the cars. No extensive tool equipment is required, inasmuch as the G.T.R. shop facilities at Point St. Charles are available for heavy repairs. At the St. Lambert headquarters perforated steel sanitary lockers add to the road's modern equipment.

ROLLING STOCK.—The car equipment first put into service included 14 single end control 49 ft. 4 in. by 8 ft. 1 in. cars, with 56 seat standard interurban closed bodies, of 54,500 lbs. total weight, which weight was necessarily limited, as previously mentioned by the permissible loading on the Victoria Jubilee Bridge. Their motor equipments of four Westinghouse 101 B2, 40 h.p., 600 volt, d.c. motors, geared 18/66, give satisfactory service. Trucks are standard Curtis type, placed 25 ft. 4 ins. centre to centre, 6 ft. wheel base, Westinghouse automatic air brakes, with individual compressors and the usual hand brakes are on each motor car.

Adhering to this type, and with equipments of 200 h.p. in Westinghouse 306, 50 h.p. at 500 volts d.c. interpole railway motors, an addition of eight cars has been made. The car bodies were built and equipment installed by the Ottawa Car Co., from specifications prepared under direction of the railway company. They have a maximum passenger seating capacity of 56. Two have baggage compartments, two are straight passenger, and four are combination smoking and passenger. The Westinghouse type H.L. multiple unit control system is used on the eight new motor cars to allow the operation of trains for heavy traffic. The cars are coupled together by automatic couplers. They are lighted by 30 c.p. lamps and Crouse Hinds luminous arc headlights are used. Tail lamps are standard, and an equipment of torpedoes and torches is carried on each motor car. The car heating system consists of Gold 115-E-1 heaters in two circuits of 6 and 12 each.

A 48,000 lb. 160 h.p. sweeper and locomotive, geared 15/69, and two rotary snow ploughs of the same power, geared 15/69, are extra equipment, and the possible purchase of other locomotives for freight handling will make this a very modern electric road.

OPERATION.—During reconstruction of the road its original service has not been interrupted. On its own tracks, cars and trains are operated by the Chief Dispatcher, located at St. Lambert. They have a headway of 20 and 40 minutes; those to Longueuil being scheduled to return in 1 hour, 20 minutes, allowing 28 minutes running time each way; the trip to Richelieu taking 50 minutes from the Montreal city terminal, a round trip in 2 hours. On the Richelieu service this will permit an average speed of 25 miles an hour, the maximum attainable being 38 miles on hour.

When on the Central Vermont Ry. tracks, the Richelieu cars are operated according to standard steam road rules, and the dispatch of the trains is done by telegraph from the office in St. Albans, Vt. The double dispatching arrangement satisfactorily permits the simultaneous operation of the electrical and steam road traffics.

At St. Lambert car barns motor cars are run in over the inspection pits once every day in regular service, when they are gone over by the inspectors of trucks, wheels, air, motors, and controllers. The Superintendent, the clerical force, and other employes make their headquarters here.

PERSONNEL.—The officers of the M. & S.C. Ry. Co. are:—W. Wainwright, President; W. B. Powell, Vice President and General Manager; J. Yates, Secretary; Frank Scott, Treasurer.

In bringing the road to its present stage of development, Bion J. Arnold has supplied his considerable facilities as consulting electrical engineer and traction expert, both in making the general and detailed plans and specifications, and in supervising the actual construction to date, the detail work being in charge of his principal assistant, F. A. Sager, and of A. T. Hunt as Resident Engineer in the field.

Montreal Tramways Company's Annual Meeting.

Following are extracts from the report presented at the annual meeting, Aug. 5:—

Your directors beg to submit their second annual report, accompanied by the financial statements, which show the following results for the year ended June 30.

Gross earnings		$6,753,227.37
Operating expenses		4,031,664.57
Net earnings		$2,721,562.80
From which deduct:—		
City percentage on earnings	$489,079.88	
Interest bonds and loans..	721,151.76	
Interest Debenture stock	800,000.00	
Taxes	73,000.00	
		$2,083,231.64
Net income		$ 638,331.16
Dividends		156,382.00
Surplus		$ 481,949.16
Less:—		
Proportion of discount on bonds sold	$ 63,714.20	
Transferred to contingent account	200,000.00	
Transferred to capital reserve	23,670.17	
		$ 287,384.37
Transferred to general surplus		$ 194,564.79

In view of this being the first complete year's operation of this company, the figures submitted cannot be compared with the figures of the last statement, which covered nine months only, but your directors are pleased to state that the increase in gross earnings and the ratio of operating expenses to earnings are satisfactory.

Your directors have appropriated from surplus $200,000 for contingent account, this being in addition to $300,000 appropriated from earnings for the same purpose, making a credit to this account during the year of $500,000, which added to the amount carried forward last year of $127,648.13, makes a total credit to this account of $627,648.13, against which has been charged $442,892.13, leaving a balance at the credit of this account of $184,756.

During the year there has been expended on capital account $976,008.07.

Following out the policy adopted by the company of insuring its properties against fire, a large sum has been spent in changes and additions to same which has resulted in a substantial reduction in premium rates, as well as improving the properties.

During the year the company issued $2,890,000 of its 5% 30 year gold bonds at a satisfactory figure. From the sale of these bonds there remains at the credit of the company at the Harris Trust & Savings Bank, Chicago, $1,637,954.75, which is at the disposal of the company for extensions and improvements. Your directors have issued 9,993 shares of common stock, which have been allotted to the shareholders at par. The bonds, debentures and common stock have been listed on the Montreal Stock Exchange. Application has also been made to have the bonds listed on the London and New York Stock Exchanges.

During the year an interim dividend of 5% was paid, and a dividend of 2½% was declared for the quarter ended June 30 last, payable on Aug. 1.

The following exclusive franchises have been granted to the company:—Parish of St. Laurent, 25 years; Town of Mount Royal, 25 years; Town of Pointe aux Trembles, 40 years; Town of Montreal East, 40 years.

The company has continued its liberal policy towards its employes in respect to wages, having increased them during the year.

The property has been maintained in a proper state of efficiency, and in addition to the large sum spent on maintenance and upkeep there has been expended on extraordinary renewals of track and rolling stock $442,892.13.

Your directors have come to an understanding with the City of Montreal, which it is hoped will tend to relieve the congestion which has arisen by reason of the great growth of the city.

Expenses per cent. of earnings	59.71
Passengers carried	159,892,021
Car earnings per passenger	4.09c
Transfers	53,505,304
Total passengers carried	213,397,325
Car earnings per passenger total carried	3.06c

ASSETS

Cost of road and equipment		$32,913,808.61	
New construction		976,008.07	
			$33,889,816.68
Accounts receivable		312,814.27	
Stores		484,733.59	
Discount on bonds		81,670.00	
Cash in bank and on hand	$ 586,404.88		
Cash on Deposit Harris Trust and Savings Bank	1,637,954.75		
Cash Underlying Securities Redemption Fund	622,328.03	$2,846,687.66	
			$3,725,925.52
Investments			395,000.00
			$38,010,742.20

LIABILITIES

Capital stock (common subscribed)	$3,000,000.00		
Less unpaid and subject to call	818,790.00		
		x$ 2,181,210.00	
Debenture stock		x 16,000,000.00	
First and refunding Mortgage 5% gold bonds		13,335,000.00	
Underlying bonds	$4,420,000.00		
Less redeemed and cancelled	524,713.32		
		3,895,286.68	
Mortgages		36,863.00	
			$35,448,359.68
Accounts and wages payable		366,632.24	
Accrued interest		236,759.95	
Accrued tax on earnings		371,070.47	
Employees Securities		23,985.28	
Unclaimed dividends		1,956.57	
Unredeemed tickets		139,740.96	
Suspense Account		179,153.18	
Dividend payable Aug. 1st		56,697.00	
			1,375,995.65
Capital Reserve		600,000.00	
Contingent account		184,756.00	
Surplus		401,630.87	
			1,186,386.87
			$38,010,742.20

It was decided to increase the board from 7 to 9. The retiring directors were all re-elected and W. G. Ross, formerly managing director Montreal St. Ry. Co., and P. J. McIntosh, of New York, were added to the board. The directorate for the current year is as follows:—President, E. A. Robert; 1st Vice President, J. W. McConnell; 2nd Vice President, F. H. Wilson; other directors, W. C. Finley, G. C. Foster, P. J. McIntosh, J. M. McIntyre, W. G. Ross, Hon. J. M. Wilton. The following officers were re-elected:—Secretary-Treasurer, Patrick Dubee; Assistant Secretary, A. E. Shaw; General Manager, J. E. Hutcheson.

London St. Ry. Gross earnings for July, $29,965.54; expenses $20,749.39; net earnings $8,946.15; deductions $2,450; net income $6,496.15, against $28,205.35 gross earnings; $18,711.63 expenses; $9,493.72 net earnings; $2,450 deductions; $7,043.72 net income for July, 1912.

Regina Municipal Ry. Revenue for four weeks ended July 26, $18,609.35. Passengers carried, 449,728.

The Toronto civic street railway service on St. Clair Ave., from Yonge St. to West Toronto, was put into service Aug. 25. A 2c. fare is being charged, and six tickets are being sold for 10c.

Edmonton Interurban Railway Construction, Etc.

Construction on this line, which was commenced last autumn, was again taken up last spring. We were officially advised recently that the initial seven miles from the outskirts of Edmonton, to St. Albert, Alta., had been graded and track laying started, that material for 10 miles was on the ground, and that the construction of the three miles intervening between the Edmonton Radial Railway and the Company's line would be completed by the end of August.

We are officially advised that it is not the Company's intention to operate its cars, at present, by electric power. Traffic conditions ruling at present, and for the immediate future point to the development of the system by means of individual power units rather than by the establishment of a central power station, which would involve a tying up of capital that could be more advantageously applied to the construction of mileage. It has therefore been decided to use cars operated by internal combustion motors, and after a very thorough and exhaustive examination of various types, made by the Chief Engineer and the directorate, both on this continent and in Europe, a type of car manufactured in England has been selected. The most outstanding feature of this car lies in the transmission, in which all gearing is dispensed with. The power of the engine is transmitted, through the medium of a pump connected therewith, by a column of oil under pressure, to oil motors attached to the axles of the driving truck. This forms a very elastic transmission, and is claimed to suffer from none of the defects which are necessarily attached to the old form of gear transmission. The control is directly from the engine, and it is claimed that the car may undergo the most violent changes in speed and direction and may be brought to a dead stop without the use of brakes, without subjecting any part of the mechanism to undue strain. These cars have undergone very exhaustive tests, not only at the hands of the English manufacturers, but also in cars in use in various parts of the world. The cars ordered by the Edmonton Interurban Ry. Co., however, are as yet the largest built to be equipped with this transmission, and it is stated that should the initial test be satisfactory, cars of similar pattern will be used by the Australian Government on the new transcontinental line now being built across the Australian continent, the operation of which by steam power over the arid regions of the interior would be attended with great difficulty.

Negotiations are in progress with the City of Edmonton for running rights over the municipal railway, so that the company cars may run right into the heart of the city.

Two Car Trains on Hull Electric Company's Railway.

The illustration on this page shows a Hull Electric Co.'s two car train on a curve of 40 ft. radius. These trains are used to handle traffic during rush hours, and during race week they proved very efficient and economical between Ottawa and Connaught Park Jockey Club.

The cars are fitted with Westinghouse S. M. E. air brakes and automatic car and air couplers. The trailer has a combined entrance and exit at the front end and there are no steps on the rear of the trailer. Both cars are operated P. A. Y. E. with one conductor on the rear of the motor car and one conductor in charge of the trailer.

We are indebted to G. Gordon Gale, M.Sc., A.M. Can. Soc. C.E., General Superintendent, for the photograph and information.

Two Car Train, Hull Electric Co.

Electric Railway Finance, Meetings, Etc.

British Columbia Electric Ry.—Gross earnings for June, $543,186; operating expenses, $354,049; net operating earnings, $189,137; renewal funds, $51,620; net earnings, $137,517; approximate income from investments, $35,000; net income, $172,517, against $498,306 gross earnings; $317,840, operating expenses, $180,466 net operating earnings; $37,935 renewal funds; $142,531, net earnings; $25,000 approximate income from investments; $167,531 net income for June, 1912. Aggregate gross earnings for 12 months ended June 30, $6,812,309; net earnings $2,289,797, against $5,749,649 aggregate gross earnings, and $2,004,361 net earnings for same period 1911-12.

Cape Breton Electric Co.—Gross earnings for June, $30,644.70; operating expenses and taxes, $17,913.18; net operating earnings, $12,731.52; interest charges, $4,891.66; balance, $7,839.86; bond sinking and improvement funds, $1,190; net balance, $6,649.86; against $29,448.22 gross earnings; $16,791.57 operating expenses and taxes; $12,656.65 net operating earnings; $4,495.84 interest charges; $8,160.81 balance; $1,206.67 bond sinking and improvement funds; $6,954.14 net balance for June, 1912. Aggregate gross earnings for 12 months ended June 30, $373,788.11; operating expenses and taxes $200,742.94; net operating earnings $173,045.17; interest charges $55,931.11; balance $117,114.06; bond sinking and improvement funds $14,380; net balance $102,734.06, against $346,437.67 aggregate gross earnings, $191,444.64 operating expenses and taxes; $154,993.03 net operating earnings; $54,050 interest charges; $100,943.03 balance; $13,880 bond sinking and improvement funds; $87,063.03 net balance for same period 1911-12. Construction charges for June, $4,364.83, and for 12 months ended June 30, $42,274.38.

Grand Valley Ry.—An order was made Aug. 7, for the issue of a distress warrant against the Company's property for $7,555.62, arrears of taxes. The warrant is not to be issued until Sept. 17. The Company is in the hands of E. B. Stockdale, Toronto, as receiver, and an action by the City of Brantford for the forfeiture of the franchise in the city is pending. The receiver has no funds out of which to pay the taxes, and it is claimed that he cannot raise them because of the action.

Moose Jaw Electric Ry.—Some extracts from this company's annual reports for 1912 were given in Canadian Railway and Marine World for July, pg. 342. The following particulars have been received since:—Gross revenue, ticket sales, cash fares, special cars, advertising, lighting, etc., $77,996.85; gross cost of management, operation and maintenance, $65,925.92, showing a surplus of revenue over expenditure of $12,070.93.

Quebec Ry., Light, Heat and Power Co.—Sir Rodolphe Forget, President, is reported to have stated recently, that the bond interest had all been baid, that the company is in a good position, that its earnings are sufficient to cover the whole of the operating expenses and other charges, and that it is anticipated that in the course of a year or two, with careful management, the present difficulties will have been cleared up.

See Quebec and Saguenay Ry under "Railway Finance Meetings, etc."

The St. John (N. B.) Ry. Co. is issuing $200,000 new stock at par. The proceeds are to be used in connection with the extensions and improvements now in progress.

Toronto Ry., Toronto and York Radial Ry., and allied companies.—Gross earnings for June, $815,206; operating expenses, maintenance, etc., $405,337; net earnings, $409,869, against $696,980 gross earnings; $357,365 operating expenses, maintenance, etc.; $339,615 net earnings, for June, 1912. Aggregate gross earnings for six months ended June 30, $4,655,486; net earnings, $2,249,422, against $4,012,719 aggregate gross earnings; $2,036,072 net earnings for same period, 1912.

The Toronto Ry. receipts for July were $500,021.45, against $445,896.44 for July, 1912 The percentage paid to the city for July was $100,004.29, against $89,279.29 for July, 1912.

Windsor, Essex and Lake Shore Rapid Ry.—The shareholders will be asked, in addition to the regular business to be done at the annual meeting to be held in Windsor, Ont., Sept. 3, to ratify a bylaw, resolution and agreement made Dec. 17, 1909, with the Union Bank, and for the issue of the balance of the bonds, amounting to $250,000, now in the treasury, in accordance with the terms of such bylaw, etc.

Winnipeg Electric Ry.—Gross earnings for June, $321,037; operating expenses, $173,270; net earnings, $147,767; against $300,402 gross earnings, $150,090 operating expenses, $150,312 net earnings for June, 1912. Aggregate gross earnings for six months ended June 30, $1,972,374; net earnings, $876,989; against $1,808,703 aggregate gross earnings, $841,129 net earnings for same period, 1912.

Electric Railway Notes.

The Edmonton Radial Ry. has received six city cars, part of order for 35, from the Preston Car and Coach Co.

The Dominion Power and Transmission Co. has received two suburban cars from the Preston Car and Coach Co.

The Regina Municipal Ry. has received two single truck city cars, completing an order of six, from the Preston Car and Coach Co.

The Board of Railway Commissioners has approved of the Hull Electric Co.'s bylaw covering rules and regulations for the governing of its employes.

In connection with the operation of electric railways throughout the Dominion, there were no fatal accidents during June, but there were 11 non fatal ones.

The Hudson Bay Co. hired the 65 cars of the Calgary Municipal Ry. for four hours on Aug. 18, and carried passengers free during that time in connection with the opening of its new store in the city.

The Montreal City Council is being asked to pass a resolution for the annullment of the franchise granted to the Canadian Autobus Co., on the ground that it has broken its agreement in not beginning its service in June.

The Montreal Tramways Co. has entered a test case in order that the courts may determine how far a conductor may go in endeavoring to enforce compliance on the part of passengers with the regulations enacted by the company to maintain good order on the cars.

Following the voting in favor of the operating of cars on Sundays in the municipalities of St. Andrews and Selkirk, an agreement has been reached between the municipalities and the Winnipeg, Selkirk and Lake Winnipeg Ry., with the approval of the Public Utilities Commissioner for Manitoba, that the Sunday service shall consist of seven cars each way. Ordinary fares will be charged, and excursion fares will be granted as circumstances call for. The agreement is for five years.

The Imperial Privy Council recently gave judgment in the appeal from the decision of the Canadian courts, in what is known as the Point Grey, B.C., electric railway franchise case. The municipal council of Point Grey passed a resolution granting the British Columbia Electric Ry. permission to construct an electric railway, without obtaining the formal assent of the ratepayers. Certain ratepayers objected and obtained an injunction preventing the company operating cars on the lines which had been built in Point Grey. The ratepayers voted in favor of the franchise Sept., 1912, and the Privy Council now declared that the original action of the council was valid.

Judgment has been given in London, Eng., in favor of the Toronto Ry., and the Toronto and York Radial Ry., in an action against the National British and Irish Millers Insurance Co., for the recovery of a percentage alleged to be due from the insurance company as underwriters of fire insurance on sheds and contents of the railway companies, and which were damaged by fire, Mar. 25, 1912. Other underwriters concerned agreed to the amount fixed by the adjuster, but the defendant company claimed that the adjustment was not legally binding, and was on a wrong basis. The judgment held that the plaintiffs were entitled to a finding, but that the adjustment was not legally binding, and the amount to be paid would be ascertained hereafter. The question of costs was reserved.

Electric Railway Projects, Construction, Betterments, Etc.

British Columbia Electric Ry.—The laying of a second track on the line along the Westminster Road in South Vancouver has been practically completed.

An extension of the line in the Queensboro section of New Westminster is to be built at once along Canal St., 2,200 ft., to a junction with the Canadian Northern Pacific Ry. tracks at Ewen Ave. (Aug., pg. 344.)

Buffalo, Lockport and Rochester Ry.—Application has been made to the Public Service Commission of New York State for permission to reorganize this company, and to amalgamate with other lines, for the purpose of giving a through service by means of an electric railway, between Rochester, N.Y., and Toronto. The plans, so far as they have been outlined, disclose that it is proposed to use the Buffalo, Lockport and Rochester Ry. line between Rochester and Lockport, lease the International line between Lockport and North Tonawanda, and run over the proposed frontier lines of the International line to Niagara Falls, N.Y. The proposed Trans-Niagara bridge would be used to obtain an entrance into Canada, where connection would be made with the electric lines existing or projected, owned by the Mackenzie, Mann and Co.'s interests. This is the revival of the plans proposed some years ago, but at present nothing definite is known, but that the New York State Public Utilities Commission has before it the application referred to.

Burrard, Westminster Boundary Ry. and Navigation Co.—In connection with the proposal to build an electric railway from Mission to Vancouver, B.C., one of the questions discussed was the construction, with government aid, of a bridge across the Pitt River, near Coquitlam. It was announced on behalf of the British Columbia Government, July 28, that tenders were to be immediately asked for the building of the necessary piers and abutments for this bridge, and that the Government had bought from the C.P.R. the superstructure of the present bridge across the Pitt River at Coquitlam. This bridge is being replaced by a new double track one, and the B.C. Minister of Public Works said, "We have awarded a contract to Armstrong and Morrison to move the sections of the old bridge away as fast as the C P R. is through with them. They will be placed on pile supports nearby to remain until the substructure for the new bridge is ready." The new bridge will provide for general traffic and the proposed electric railway. (July, pg. 344.)

Calgary Municipal Ry.—The Calgary City Council has approved of a project for the building of an extension of the line through Shaganappi Park. The promoters of the extension agree to pay $20,000 for construction, and guarantee the expenses of operation for four years, at the end of which time the city is to pay back the cost of construction. The signing of the agreement is being held up, pending a decision on the question of whether the agreement has to be ratified by the ratepayers or not. (May, pg. 235.)

Edmonton, Stony Plain and Wabamun Ry.—We are officially advised that this projected railway will run from Edmonton West to Stony Plain, and on to Lake Wabamun, 45 miles. It is hoped to build several miles of line this year. The right of way has been secured and cleared for a good distance out of Edmonton. The officers and directors have not yet been chosen. E. S. McQuoid, Edmonton, is solicitor for the provisional directors. (Aug., pg. 395.)

Forest Hill Electric Ry.—The York (Ont.) Township Council, Aug. 8, granted a franchise for this proposed electric railway within the township. It is stated that construction will be started at once. (Aug., pg. 395.)

Montreal Tramways Co.—The Westmount City Council has given permission for the building of a car line on Sherbrooke St., from Green Ave. to the city limits. (Aug., pg. 395.)

Morrisburg and Ottawa Electric Ry.—We are officially advised that a contract has been let to R. J. Tierney & Co., Ottawa for the building of 10 miles of line from Ottawa to South Gloucester, Ont. L. Von Sydow, Ottawa, is Engineer in Charge. (Aug., pg. 395.)

Nipissing Central Ry.—The Ville Marie, Que., Chamber of Commerce, has passed a resolution in favor of the extension of the line to Fort Timiskaming and Ville Marie, and proposes to send a deputation to the Timiskaming and Northern Ontario Ry. Commission to urge its construction.

A start was made, Aug. 7, with the construction of the new car barns at North Cobalt. The contract has been let to Sutcliffe and Neelands, Liskeard, Ont., who expect to have the work completed by the end of the year. (Aug., pg. 395.)

Ontario Hydro-Electric Power Commission.—F. A. Gaby, Chief Engineer, recently stated that the preliminary work on the survey for the projected electric railway from Toronto to Port Perry, Ont., had been completed, and that a report was being prepared for submission to the Commission. A route with satisfactory gradients is said to have been secured. (Aug., pg. 395.)

Port Arthur and Fort William Electric Ry.—The city of Fort William, Ont., is advertising for tenders for erecting an addition to the Walsh St. car barns, and the addition will be of brick, 260 ft. long and 30 ft. high. (April. pg. 185.)

Quebec Ry., Light and Power oC.—H. G. Matthews, General Manager, is reported to have stated Aug. 12, that it was expected to have the Limoilou extension in operation over the Dorwn Bridge, as far as 4th Avenue, Limoliou by Aug. 30. (June, pg. 287.)

Regina Municipal Ry.—Superintendent Doughty is reported to have stated, Aug. 8, that construction for the year was well advanced, but was being held back somewhat to enable the other city departments to catch up with the work on sewers and waterwork mains. An expenditure of about $200,000 has been made on these extensions this year, and they will be brought into operation as fast as possible. The city is expanding rapidly, and it is the policy of the council to provide transportation facilities as long as the expansion continues. It was reported that the city was losing $200 a day on the railway. As a matter of fact the deficit in July was $1,423.91. (Aug., pg. 395.)

St. John Suburban Ry.—Surveys have been made for a line from St. John to Loch Lomond, 14 miles, and for a portion of the line from St. John to Rothesay. It is proposed in addition to run a line from St. John to Westfield and Millidgeville, N.B. (June, pg. 287).

Stratford Ry.—C. T. McAllister, Toronto, and A. E. Beer, Montreal, have been in Stratford negotiating with the directors of the company and the city council respecting the building of an electric railway. In the conference it was stated that the interests represented desired to build an electric railway from London to Grand Bend, via Parkhill, and one from Stratford to Grand Bend, via Exeter, and had also under consideration the possibility of building a line from Stratford to Wellesley and Linwood. In connection with these plans it was proposed to acquire the charter of the Stratford Ry., which has been abandoned by the Mackenzie Mann & Co. interests. It was stated that those interested in the matter have acquired a charter covering the lines to Grand Bend, at which point a site of 100 acres has been acquired for park purposes. A committee was appointed to negotiate with the promoters as to any projected line in Stratford.

C. T. McAllister was in Stratford Aug. 7, in connection with the proposed railway. He said it was a little early to say anything about the suggested line north. The lines from London to Grand Bend, and Stratford to Grand Bend were absolutely assured. Arrangements had been made for the purchase of the necessary right of way. The London-Grand Bend line, for which the company had acquired a charter would be built first. Application would be made to the Ontario Legislature next session for a charter for the Stratford-Grand Bend line. Local reports state that the promoters of the new line are negotiating for the purchase of the charter rights, right of way, etc., of the People's Ry., between Stratford and Guelph. Some little grading was done between these points about three years ago. (Aug., pg. 395.)

Toronto Suburban Ry.—The construction of this railway is being held up near Islington owing to some difficulties as to street crossings, to which the Etobicoke Township Council object. A compromise is being arranged. Grading is practically completed for the greater part of the distance into Guelph, and considerable material for tracklaying has been delivered on the right of way from Cooksville westerly, but at the time of writing no track had been laid. (Aug., pg. 395.)

The Vancouver Hydro-Electric and Tramway Co., which was incorporated under the British Columbia General Act respecting electric railways, Nov. 12, 1912, is reported as proposing to construct an electric railway between Ladysmith and Nanoose Bay, with branches and extensions. The two points named are 50 miles apart, and it is said that the necessary surveys have been made, and that the Minister of Railways for the Province has approved of the route. Application is said to have been recently made to use a trackless system of electric motor trams, but no decision has been given. M. Yates, Victoria, B.C., is the principal promoter. (July, pg. 345.)

Winnipeg Electric Ry.—The extension of the Park line along the Pembina highway has been practically completed as far as the new University buildings, three miles, and is to be extended still further to St. Norbert. (Aug., pg. 395.)

Telegraph, Telephone and Cable Matters.

The Canadian Northern Telegraph Co. has opened offices at Moose Jaw and Beadle, Sask.

W. J. Camp, Assistant Manager, C.P.R. Telegraph, Montreal, is on a tour of inspection over the system in the west.

An agreement between the British Government and the Marconi Wireless Telegraph Co., for the erection of a number of wireless telegraph stations on British territory throughout the world, has been ratified by the British Parliament.

The Colonial Secretary announced recently in the British House of Commons, that by a new subsidy arrangement, the rates by the West Indies cable had been reduced by about 50%. An additional subsidy is now being paid, of £16,000 a year, divided between the British and Canadian Governments.

The Western Union Telegraph Co.'s cable to Bay Roberts, Nfld., has been laid, and the building of the company's new offices at that point is proceeding rapidly. The laying of the Colinet cable is also proceeding. It will be laid in a specially dug trench, and through intersecting lakes to Shearstown, about 25 miles.

A. B. Smith, Manager, G. T. Pacific Telegraph Co., who returned to Winnipeg recently, after an inspection trip over the western lines, stated that telegraphic service would shortly be extended to McBride, B.C., and that commercial service to Moose Jaw, Calgary and other important points would also soon be available.

The C.P.R. Telegraph Department at Toronto has moved into the new C.P.R. building, King and Yonge Sts., from its old offices in the Board of Trade Bldg. The operating room in the new building was completely equipped with the most modern appliances, so that in the moving of the operators no delay whatever occurred in the telegraph service.

J. T. Phelan, Superintendent of Telegraphs in Northern British Columbia and Yukon for the Dominion Government, on his return to Vancouver from the north recently, stated that the Government is building a composite telegraph and telephone line from Queen Charlotte to Masset and Tohill, and connecting Queenstown, about 85 miles. The whole of the line is land wire, except a short stretch of cable at Alford Bay.

The Great North Western Telegraph Co. has completed the installation of a motor generator plant at the Michigan Central Rd. station offices at St. Thomas, Ont., replacing the gravity battery with which the work has been done in the past. The plant consists of five motor generator sets, supplied by the Canadian General Electric Co., each motor of 110 volts, three phase, 25 cycle, and the generators of three units of 240 volts d.c., compound wound and two units 25 volts d.c., compound wound. The telegraph office is also equipped with two sets of Athearn standard quadruplex, two bridge duplex and single line repeaters. The plant is under the supervision of C. E. Davies, the company's Supervisor of Equipment, and the M.C.R. interests are looked after by J. J. Ross, Superintendent of Telegraphs, and C. O. Vandevoort, Telephone Engineer.

Grounding of the s.s. Lake Manitoba.

Following is a judgment of the Dominion Wreck Commissioner, Commander H. St. G. Lindsay, concurred in by Capts. F. Nash and John Mitchell, as nautical assessors, in the grounding of the C. P. R. s. s. Lake Manitoba, on the Isle of Orleans, July 28:

The s.s. Lake Manitoba, belonging to the C.P.R. and engaged in regular trade between Canada and Liverpool, Eng., appears to well found and equipped in every respect, and was navigated in a proper and seamanlike manner up to July 28, when she left Father Point, after having taken on the company's regular pilot, A. Lachance, and proceeded towards Quebec. From this time up to the stranding she was navigated by courses, given under the direction of the pilot, from point to point, and a mean of these courses entered in the ship's log. According to the evidence, St. Jean light was passed abeam on July 29, at a little less than ¾ mile, and a course was then set to pass to the southward of St. Laurent light, which was in sight. Shortly after passing St. Jean, the St. Laurent light became obscured by fog, and orders were then given to put the engine room telegraph at stand by, and immediately after, to half speed. The master being off the bridge, he was at once notified by the junior officer on watch as to the change in weather conditions, and arrived on the bridge just as the return signal for half speed was made from the engine room. It appears that at this time the pilot who was on top of the wheel house, beside the standard compass, saw a bright light about a point on the port bow, and for some unknown reason gave orders to the man at the wheel to port, and a second order to port more was afterwards given, which orders were carried out and the helm put about three parts over, the vessel's head swinging to the northward. The master on coming up to where the pilot was, noticed that the vessel was off her course, by the position of the land, and on asking the pilot the reason for this, was informed that he had ported for a steamer. The man at the wheel was immediately ordered to starboard, but before this order was effective the vessel took ground. She came off stern first under her own steam shortly after, and it was found on docking the vessel at Montreal, that she was very badly damaged.

The court unanimously unites in its opinion that the cause of the casualty was entirely due to the negligence of Adjutor Lachance, the pilot, inasmuch as he totally disregarded the rule of the road in porting for a bright light on his port bow, and also in not being aware of the exact position of his vessel with regard to the land. Moreover circumstances ultimately proved that there was not sufficient room for the execution of this manoeuvre. It is also of the opinion that had the pilot on seeing the bright light, at once stopped the engines and reversed, if necessary, the casualty would have been avoided. The court therefore suspends his license until the completion of the present season of navigation.

The pilot, A. Lachance, is President of the Corporation of Pilots of Quebec, and was one of the commissioners appointed by the Dominion Government, in the recent enquiry into pilotage matters on the St. Lawrence.

Marine Department.

Car Ferry Steamship for Prince Edward Island Service.

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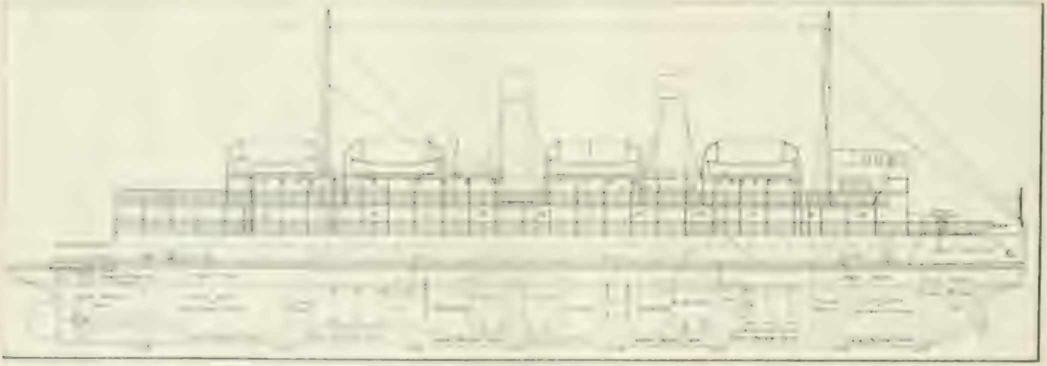

Prince Edward Island Car Ferry.

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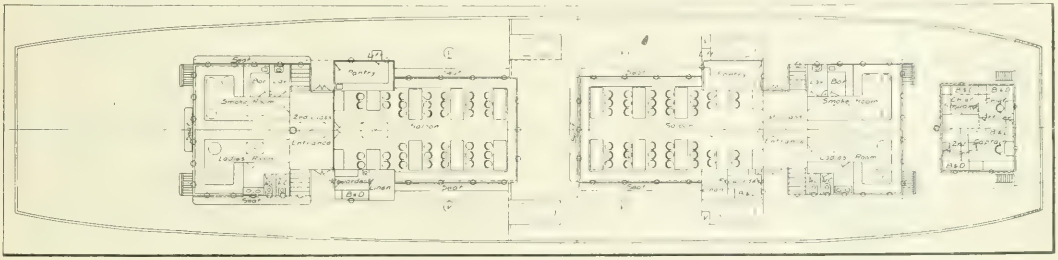
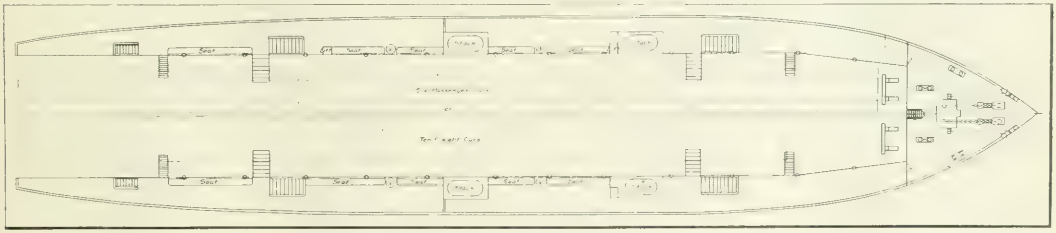
becomes too thick and dense to cut through it directly, the heavy bow is formed to ride upwards on to the ice surface, and the layer becomes broken up through the sheer superimposed weight of the vessel and the propelling effort exerted. The results of the experience gained in the operation of the Ermack and other similar vessels have been incorporated in this new vessel, which will therefore combine all that is modern and of proved excellence in the way of design and fittings for her special work.

The contract for the pier at Cape Tormentine has been let to A. P. Mackie, and new tenders are under consideration for the pier at Carlton Point, the Halifax Dredging Co. having withdrawn the tender originally accepted for this work. Parliament has voted $1,000,000 on account of the work, which is to include the alteration of the gauge of the P.E.I Ry. from narrow to standard. No decision has been announced as to when this part of the work will be done, but it is expected to have the car ferry in operation by the winter of 1914. This will enable freight cars to be landed in P.E.I. and reloaded with freight, thus saving at least two handlings.



Prince Edward Island Car Ferry, Promenade Deck.



Prince Edward Island Car Ferry, Main Deck.

Stranding of the s.s. Maia.

The Dominion Wreck Commissioner, Commander H. St. G. Lindsay, assisted by Capts. Neil Hall and J. H. Harrison, as nautical assessors, held an enquiry recently into the causes of the stranding of the German s.s. Maia, on Seal Island, in the Bay of Fundy, while en route from Magdalen Islands to Manchester, Eng., June 7. Following is the judgment:—

The court is of opinion that the casualty was due to the fact that the master made no allowance for the set of the ebb tide when setting his course on the morning of June 7, as he must have had at least two hours of strong ebb setting him to the southeast before the stranding, and that had the lead been used before the alteration of the course was made the stranding might have been avoided. It is therefore unanimous in its opinion that the master is entirely to blame for the casualty, but having no jurisdiction over his certificate, it recommends that a copy of the evidence and judgment be forwarded to the German Government.

Collision of the Steamboat Mikado With a Motor Launch.

An enquiry into the cause of a collision between the Acadia Sugar Refining Co.'s steamboat Mikado and a motor launch in Halifax harbor, June 7, in which one of the occupants of the launch was drowned, was held at Halifax, N.S., recently, by the Dominion Wreck Commissioner, Commander H. St. G. Lindsay, assisted by Capts. Neil Hall and J. H. Harrison, as nautical assessors. Following is the judgment:—

The court is of opinion that the casualty was caused by the person in charge of the motor launch in not paying attention as to which direction his boat was going after she left the breakwater, he being engaged in attending to his engine, until his attention was called to the fact that the Mikado was close alongside, when he appears to have put his helm the opposite way to that which he intended, and so ran his boat under the bows of the Mikado. The court, therefore, exonerates the master of the Mikado from all blame, as he appears to have done everything he could to avoid the accident. While expressing sympathy with the relations of the man who lost his life, the court severely criticizes the custom of motor boats plying in harbors in charge of inexperienced and ignorant persons to the detriment of general traffic, as being a menace to life and property.

Furness, Withy and Company, Limited.

The report for the year ended April 30 shows profits of £885,245 19s. 5d., against £768,622, 2s 5d for the previous year. £350,000 was transferred to depreciation account, £50,000 to trade contingencies fund, and £75,000 to reserve account for insurance and repairs. Dividends of 5% were paid on preference shares and of 10% on ordinary shares, and £131,020 was carried forward to credit of the current year's account.

The report states that the new cargo and passenger steamship Digby has been placed on the Liverpool and Halifax, N.S., service and is proving very successful.

Among the Company's investments shown is £100,000 of debentures in the British Maritime Trust Co., which has been heard a good deal of in Canada recently in connection with the Richelieu and Ontario Navigation Co. merger.

New Welland Ship Canal Construction.

Tenders for section 3 of the new Welland Ship Canal were received by the Department of Railways and Canals up to Aug. 27. This section is the portion of the canal through Thorold, and is about 2 miles long. While shorter than section 1, tenders for which were recently invited, as mentioned in the descriptive article of the canal in Canadian Railway and Marine World for July, it is possibly the heaviest portion of the route, including as it does the flight of twin locks 4, 5 and 6, and the single lock 7, with the guard gates beyond. This section gives a change in elevation of 186 ft., and in consequence involves constructional work of a heavy nature.

The letting of tenders for sections 1 and 3 about the same time was necessitated by the "cut and fill" nature of the two sections. In section 1, at the entrance to Lake Ontario, there is to be a long breakwater extending into the lake a little over a mile, to be made from the cuttings from the heavier excavation work in section 3. In addition, all the stone to be used on the concrete work on the whole canal is to be supplied from section 3.

The Great North Western Telegraph Co. has closed its offices at St. Felicite, Que., and Merlin, Ont.

The Steamship Glenmavis for the Canadian Lakes Trade.

The steamship Glenmavis, which has been built at Londonderry, Ireland, for the James Playfair interests, is, it is said, intended to run between Montreal and Port Colborne.

As will be seen from fig. 1, the Glenmavis follows in general arrangement and outfit the standard practice evolved by experience for a vessel of her class. She differs, however, from other lake vessels in that she is the first of this type to be constructed on the arch principle devised by Maxwell Ballard, by which a considerable saving in weight of structural material is effected in comparison with the usual system of construction.

The leading particulars of the Glenmavis are: Length, over all, 256 ft.; length, b. p., 250 ft.; breadth, extreme, 42½ ft.; depth, moulded to knuckle, 16 ft.; depth of arch, 4 ft.; total depth, 20 ft.; load draught, 14 ft.

The vessel has been classed with the British Corporation for service on the Great Lakes and the St. Lawrence River. Her structural design and scantlings are shown by the profile given in fig. 2, and the sections at an ordinary frame and a web frame given in figs. 3 and 4, respectively. It will be seen that the vessel has no sheer, the necessary height forward being secured by the adoption of a forecastle, while a bulwark is fitted round the stern aft. Following lake practice, the vessel has no 'tween decks, compensating strength being secured on the girder system, leaving the cargo hold free of all obstructions. A cellular double bottom for water ballast, with floors on alternate frames, extends all fore and aft, and there is also a large peak ballast tank forward. The frames are of bulb angle section spaced 24 in. apart, except right forward, where the spacing is reduced to 21 in. and 18 in., as shown on the profile (fig. 2). The tank top is flush plated, in order not to interfere with the working of grabs, and has no ceiling. Fenders are fitted on each side for protection when passing through the locks.

There are five cargo hatchways, 12 by 28½ ft., with shallow bulb angle coamings, and one large hatchway aft, 26 by 28½ ft., by about 4½ ft. high. The latter provides extra capacity, and at the same time assists the trim of the vessel. The hatchways are spaced 24 ft. centres. Canadian canal steamers, as a rule, have no cargo gear on board, and none is shown in fig. 1, but it is understood that the owners contemplate adding four winches with the corresponding cargo gear, masts, and derricks when the vessel reaches the lakes.

On account of the confined waters which the vessel navigates, a balanced rudder of large area is provided. The rudder is worked by a steam steering gear of special design, situated beneath the arch deck aft and controlled either from the navigating bridge forward or from a steering station on top of the after deck house. A reserve tiller is also provided on top of the arch deck, the rudder head being carried up through the deck for this purpose. To facilitate steering from the forward bridge, a steering pole is fitted at the stem to give the steersman a point to steer by. A powerful steam windlass is fitted under the forecastle deck, and arranged as shown on the plan, while for warping purposes a steam winch is provided amidships and a steam capstan aft. The anchors are housed in pockets to avoid fouling the lock gates.

The accommodation follows the arrangement usually adopted in lake vessels. As will be seen from fig. 1, the officers and seamen are berthed in the forecastle, above which is a steel house containing the chart room and the captain's office and bedroom. Above the captain's house is the flying bridge, upon which is placed the wheel house. The engineers and firemen are accommodated in steel houses at the sides of the engine and boiler casing on the arch deck aft. In the after house are also arranged the galley and pantry, the officers' mess room, an ice house, and the mess room for the crew.

The vessel is propelled by a single screw, driven by a set of triple expansion reciprocating engines, having cylinders 16, 26 and 44 in., respectively, with a stroke of 30 in. Steam is supplied by two single ended cylindrical boilers, 12½ ft. diameter by 10½ ft. long, designed for 180 lbs. pressure and working under natural draught.

The particulars of this article have been abstracted from the Shipbuilder, Newcastle on Tyne, and it is understood that a duplicate is building.—Marine Review.

Additional illustrations of this vessel are given on the two following pages.

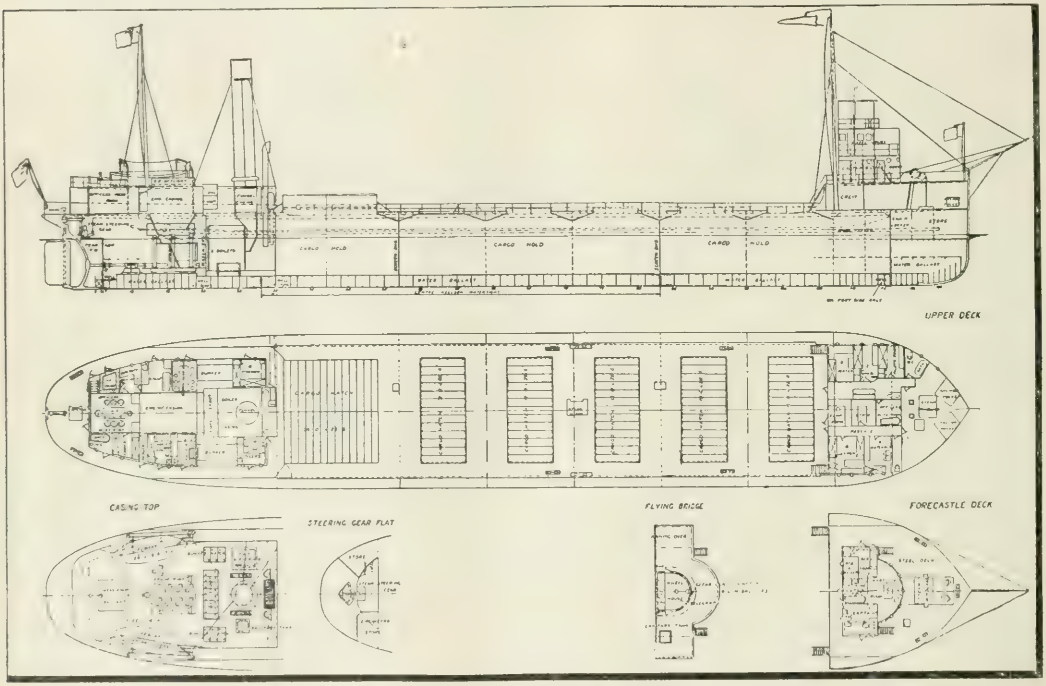


Fig. 1.—General Arrangement of the Glenmavis.

The Dominion Government wireless telegraph station at Port Arthur, Ont., was opened for business, Aug. 9. The site is on Dawson St., and is 650 by 150 ft. All apparatus is in duplicate, and in case of the failure of electrical power, the station is equipped with a generator driven by a gasoline engine of 8 h.p.

Toronto Harbor Improvements.

Tenders for the first portion of the Toronto harbor improvement scheme were invited by the Department of Public Works, to be sent in by Aug. 27, covering the portion of the work that is to be undertaken by the Government. This includes the ship channel 8,000 ft. long, through the new industrial area in Ashbridge's Bay, the eastern breakwater along the waterfront in front of Ashbridge's Bay, from the eastern channel to the Woodbine, 3¼ miles, the marginal way or bulkhead construction between the ship channel and the city side of Toronto harbor, and the western breakwater extending from the western channel to the Humber River, 4 miles. The eastern portion of the work will be of pile construction with mass concrete tops, and the western section, pile construction with concrete block tops. The extent of the work may be gathered from the following tables of the main quantities involved:

Eastern breakwater: Piles, 663,500 lin. ft.; hemlock lumber, 522,460 ft.; southern pine or B. C. fir, 8,594,136 ft.; concrete blocks, 28,912 cu. yds.; mass concrete, 5,763 cu. yds.; structural steel shapes, 3,645,850 lbs.; and stone talus 33,000 tons.

Western breakwater: Piles, 83,328 lin. ft.; cribwork, 162,000 cu. yds.; concrete blocks, 22,363 cu. yds.; mass concrete, 17,203 cu. yds.; reinforcing steel, 1 626,443 lbs.; structural steel, 1,865,570 lbs.; rock fill, 23,000 cu. yds.; and dredging, 48,515 cu. yds.

Ship channel: Piles, 1,290,534 lin. ft.; hemlock lumber, 691,260 ft.; southern pine or B. C. fir, 7,794,348 ft.; concrete blocks, 17,897 cu. yds.; mass concrete, 25,705 cu. yds.; structural steel, 3,755,220 lbs.; white oak or B. C. fir, 215,365 ft.. and dredging, 3,078,000 cu. yds.

Marginal Way: Piles, 228,412 lin. ft.; hemlock timber, 490,300 ft.; southern pine or B. C. fir, 3,127,000 ft.; concrete blocks, 4,400 cu. yds.; mass concrete, 3,082 cu. yds.; reinforced steel, 372,667 lbs.; structural steel, 439,947 lbs., white oak or B. C. fir wailing, 84,654 ft.; and dredging, 48,515 cu. yds.

E. L. Cousins, A. M. Can. Soc. C. E., is Harbor Engineer for the Toronto Harbor Commission, and J. G. Sing, M. Can. Soc. C.E. is Engineer in Charge for the Public Works Department.

Control of Ocean Freight Rates.—The question of Government control of ocean freight rates is being considered by commercial interests in Canada, and the Dominion Government proposes to take up the matter with the Imperial Government. The several departments interested have prepared statistical and other information necessary for the negotiations, which will be carried on on behalf of Canada by H. L. Drayton, Chairman of the Board of Railway Commissioners.

The construction of a tunnel under the Dover Straits, between England and France, is again to the fore, a deputation having recently waited on the British Premier to urge the taking up of the scheme. In reply, it was stated that the matter was engaging the Government's attention. Three schemes for improved means of transportation between the two countries are under discussion, and each has been declared to be quite feasible. In addition to the tunnel project, a bridge is suggested, and also a system of car ferries similar to those operating in Denmark, and between Canadian and U.S. ports.

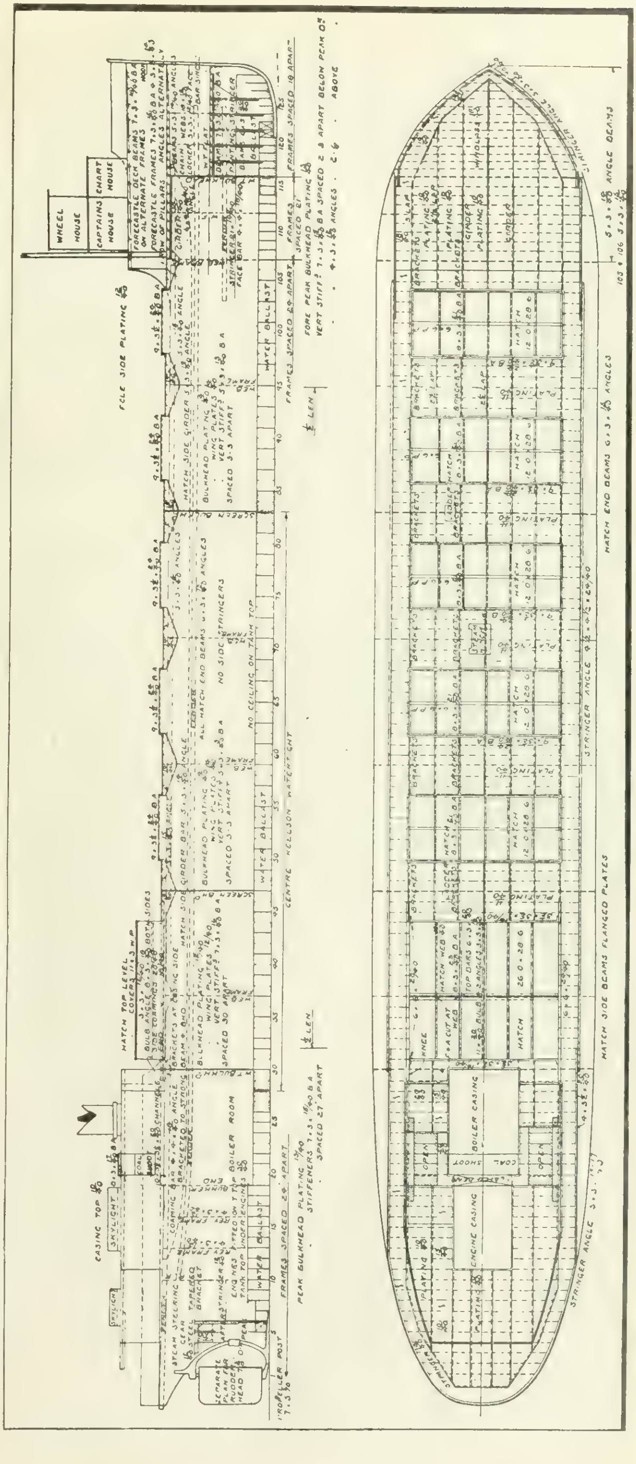


Fig. 2.—Profile and Deck Plan of the Glenmavis.

The National Steamship Company, Limited.

This company, incorporation of which has been mentioned in a previous issue, will take over the steamboats Algonquin and Natironco. The Algonquin was formerly owned by the St. Lawrence and Chicago Steam Navigation Co., and was purchased by Cawthra Mulock of Toronto about two years ago, when the Port Colborne and St. Lawrence Navigation Co. was formed to operate it, in connection with the Maple Leaf Milling Co., with which he is also associated. She was built at Yoker, Scotland, in 1888, and is screw driven by engine of 150 n.h.p. Her dimensions are, length 245 ft., breadth 40.1 ft., depth 20.6 ft.; tonnage, 1,806 gross, 1,172 register. The steamboat Natironco was formerly named Pioneer, and was owned by the Cleveland-Cliffs Iron Co., and operated by the Grand Island Steamship Co., Cleveland, Ohio. She was purchased by Canada Interlake Line, Toronto, last year, and later, sold to the National Iron Works Co., Toronto, with which company. Cawthra Mulock is associated, and she has been operated by the Canada Interlake Line. She was built at Detroit in 1892, and is of steel. Her dimensions are, length 226 ft., breadth 35 ft., depth 18 ft.; tonnage, 1,123 gross, 774 register, and she is equipped with triple expansion engines, with cylinders 20, 35 and 54 ins. diar., by 42 ins. stroke, supplied with steam by two Scotch boilers, each 12 by 11½ ft. at 165 lbs. pressure, and her engines are of 900 i.h.p. The company is being organized to carry on a general package and bulk freight trade between Montreal and Port Arthur. Following are the officers and directors. President, Cawthra Mulock; Vice President, G. F. Perry; other directors, E. H. Laschinger, M. Stobie and J. B. Foote.

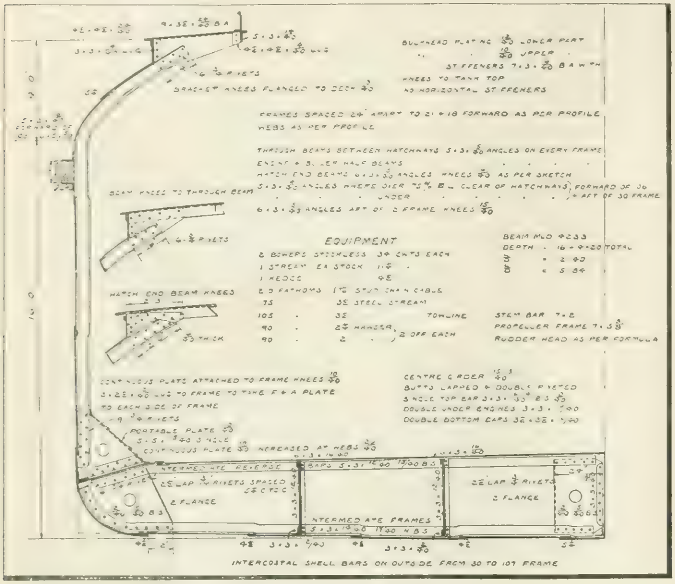

BULKHEAD PLATING LOWER PART
UPPER
STIFFENERS
KNEES TO TANK TOP
NO HORIZONTAL STIFFENERS
BRACKET KNEES FLANGED TO DECK
6 RIVETS
FRAMES SPACED 24" APART TO 21 + 18 FORWARD AS PER PROFILE
WEBS AS PER PROFILE
THROUGH BEAMS BETWEEN HATCHWAYS ANGLES ON EVERY FRAME
ENGINE + BOILER HALF BEAMS
HATCH END BEAMS ANGLES KNEES AS PER SKETCH
ANGLES WHERE OVER 75% CLEAR OF HATCHWAYS FORWARD OF 96
UNDER + AFT OF 30 FRAME
ANGLES AFT OF FRAME KNEES
BEAM KNEES TO THROUGH BEAM
6 RIVETS
EQUIPMENT
2 BOWERS STOCKLESS 34 CWTS EACH
1 STREAM EX STOCK
1 KEDGE
270 FATHOMS STUD CHAIN CABLE
75 STEEL STREAM
105 TOWLINE
90 HAWSER
90 2 OFF EACH
BEAM MLD 42 33
DEPTH 16 + 4 + 20 TOTAL
HATCH END BEAM KNEES
THICK
STEM BAR 7 × 2
PROPELLER FRAME
RUDDER HEAD AS PER FORMULA
CONTINUOUS PLATES ATTACHED TO FRAME KNEES
LUG TO FRAME TO TAKE F + A PLATE
TO EACH SIDE OF FRAME
RIVETS
PORTABLE PLATE
CONTINUOUS PLATE INCREASED AT WEBS
CENTRE GIRDER
BUTTS LAPPED + DOUBLE RIVETED
SINGLE TOP BAR
DOUBLE UNDER ENGINES
DOUBLE BOTTOM BARS
INTERMEDIATE REVERSE BARS
LAP RIVETS SPACED
2 FLANGE
INTERMEDIATE FRAMES
LAP RIVETS
2 FLANGE
INTERCOSTAL SHELL BARS ON OUTSIDE FROM 30 TO 107 FRAME

Fig. 3.—Section of the Glenmavis at an Ordinary Frame.

The Canadian Northern Telegraph Co. has opened an office at D'Arcy, Sask.

Atlantic and Pacific Ocean Marine.

The Cunard Line s.s Andania, a description of which has been given in a previous issue, arrived at Montreal, July 26, from Southampton, Eng., on her maiden trip.

The C.P.R. s.s. Empress of Russia arrived at Victoria, B.C., on her second trip from Yokohama, Japan, in 8 days, 18 hours, thus making a new record.

The French Line s. s. La Touraine, running between Montreal and Havre, France, has, it is announced, discontinued the service owing to the lack of freight.

The Canadian Northern Steamships' s.s. Royal George, which sailed from Montreal, July 26, and arrived at Bristol, Aug. 2, made a new record of 3 days and 19 hours from land to land.

The Navigazione Generale Italiana inaugurated its Canadian service with the calling of the s.s. Palermo at Halifax, N.S., July 25. The voyage from Naples to Halifax was done in 14 days.

The Judicial Committee of the Privy Council delivered judgment, Aug. 1, in the appeals of the C.P.R. and the s.s. Montcalm, in connection with the sinking of the s.s. Kronprinz Olav in the St. Lawrence River, in Sept., 1910. It was held that no blame could be attached to the Montcalm.

During July, 71 ocean going steamships, with a tonnage of 469,529, entered Montreal harbor, compared with 62 steamships and 425,228 tons during July, 1912. From the commencement of the St. Lawrence navigation season, to July 31, 227 vessels entered the port as against 189 during the same period 1912.

The C.P.R. s.s. Empress of Asia was expected to arrive at Vancouver, B.C., Aug. 30, from Great Britain, by way of South Africa, Ceylon and Hong Kong, with a large party of tourists taking a trip round the world by the C.P.R. She is scheduled to leave Vancouver, Sept. 10, on her first trip from Canada to the Orient.

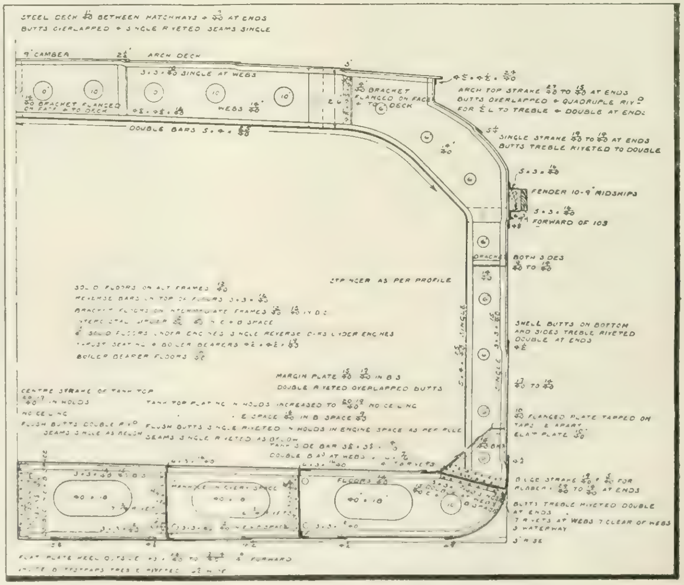

STEEL DECK BETWEEN HATCHWAYS + AT ENDS
BUTTS OVERLAPPED + SINGLE RIVETED SEAMS SINGLE
9" CAMBER
ARCH DECK
SINGLE AT WEBS
BRACKET FLANGED ON FACE + TO DECK
WEBS
BRACKET FLANGED ON FACE + TO DECK
DOUBLE BARS
ARCH TOP STRAKE AT ENDS
BUTTS OVERLAPPED + QUADRUPLE RIVD FOR ½ L TO TREBLE + DOUBLE AT ENDS
SINGLE STRAKE AT ENDS
BUTTS TREBLE RIVETED TO DOUBLE
FENDER 10 × 9" MIDSHIPS
FORWARD OF 103
BOTH SIDES
STRINGER AS PER PROFILE
SOLID FLOORS ON ALT FRAMES
REVERSE BARS ON TOP OF FLOORS
BRACKET FLOORS ON INTERMEDIATE FRAMES
INTERCOSTAL GIRDER
SOLID FLOORS UNDER ENGINES SINGLE REVERSE BARS UNDER ENGINES
THRUST SEATING + BOILER BEARERS
BOILER BEARER FLOORS
SHELL BUTTS ON BOTTOM AND SIDES TREBLE RIVETED DOUBLE AT ENDS
SINGLE
MARGIN PLATE IN BS
DOUBLE RIVETED OVERLAPPED BUTTS
CENTRE STRAKE OF TANK TOP IN HOLDS
NO CEILING
TANK TOP PLATING IN HOLDS INCREASED TO NO CEILING
E SPACE IN B SPACE
FLUSH BUTTS DOUBLE RIVD SEAMS SINGLE AS BELOW
FLUSH BUTTS SINGLE RIVETED IN HOLDS IN ENGINE SPACE AS PER RULE SEAMS SINGLE RIVETED AS BELOW
TANK SIDE BAR
DOUBLE BAR AT WEBS
FLANGED PLATE TAPPED ON
BRACKET
BILGE STRAKE AT ENDS
BUTTS TREBLE RIVETED DOUBLE AT ENDS
RIVETS AT WEBS CLEAR OF WEBS
WATERWAY
FLOORS
FLAT PLATE KEEL OUTSIDE FORWARD

Fig. 4.—Section of the Glenmavis at a Web Frame.

The s.s. Diana, conveying a party from the U.S. to the Arctic, which ran ashore in Belle Isle Strait recently, returned to St. John's Nfld., badly damaged. The party transferred to the s.s. Erik and sailed for Crocker Land early in August.

The Cairn Line s.s. Bellona, which stranded in the upper traverse of the St. Lawrence River, Oct. 31, 1912, and which has since been lying in a damaged condition at Quebec, is reported to have been purchased by a New York syndicate, who, it is stated, intend having her overhauled and repaired for use in the West Indies fruit trade.

The C.P.R. s.s. Lake Manitoba grounded during a fog off the Isle of Orleans, July 29, and sustained considerable injury to her hull. She proceeded to Montreal and landed her passengers, after which a thorough examination was made in the dry dock, when it was discovered that the repairs required were too great to be undertaken there. She subsequently sailed for New York, where the repairs were undertaken.

An Ottawa press report states that the Government has made arrangements for the subsidizing of a line of grain carrying steamships for the Hudson Bay route, and that a member of a well known shipping firm associated with the Great Lakes carrying trade has been in conference on the subject and will shortly leave for England to conclude arrangements for a number of tramp steamers for such service.

It is unofficially announced that the Allan Line steamships Alsatian and Calgarian, both of which were expected to make their maiden trips to the St. Lawrence this season, will not be completed in time to do so, but it is probable that their maiden trips to Canadian ports may be made during the winter, should the company, as is customary, undertake relief sailings for the C. P. R. Empress steamships, which are both to have thorough overhauling at the close of the St. Lawrence season.

Maritime Provinces and Newfoundland.

The Dominion Coal Co.'s s.s. Wabana, which was recently damaged through grounding near Matane, Que., while proceeding from Sydney, N.S., to Montreal, has been repaired at Quebec and returned to service.

The s.s. Beothic, under charter to the Dominion Government for a trip to Hudson Bay ports, which ran aground off Point Rich, on the northwest coast of Newfoundland, returned to Halifax, after being released, for examination and repairs.

The s.s. Terra Nova, the vessel utilized in the recent Scott Antarctic Expedition, and which has been associated with the Newfoundland sealing industry for several years, has been repurchased by C. T. Bowring and Co., and will be placed in its old service.

The Deputy Minister of Public Works has written to the Traffic Committee of the Board of Trade at St. John, N.B., that the tender of John S. Metcalf Co., Montreal, for the erection of grain conveyors to berths 5 and 6, was approximately $133,000, and that the matter was under consideration.

The dredging of the bar in St. John, N.B., harbor by the Public Works Department was expected to have reached the stage, during August, when the removal of the lighthouse marking the outer edge and the pier would be necessary. It is arranged that a gas and bell buoy is to be established at that point, and moved as dredging progresses, so that it will always mark the limit of width available for navigation, and range lights will also be established to mark the axis of the new dredged channel.

An order in council has been passed defining the pilotage limits of the port of Pictou, N.S., as from the most easterly point of Pictou Island on a line running southeast until it strikes the gulf shore at Arisaig pier, and bounded on the west by a line drawn from Amet Island to Rocky Point at the county line, and embracing all the navigable waters in Pictou County. These are the limits as they were prior to July 21, 1908, when they were extended, the extension having been cancelled as it has been pointed out by the Pilotage Authority that vessels frequently get inside the limits without sighting a pilot, and that the old limits are ample for all purposes.

Province of Quebec Marine.

The Magdalen Island Steamship Co.s s.s. Lady Sybil ran aground near Magdalen Islands, July 29.

The steamboat John Sharples which recently struck a rock near Chicoutimi, Que., cutting a hole in her stern, has been repaired at Montreal.

The Montreal Harbor Commissioners entertained to luncheon, Aug. 12, Dr. I M. Goldstein of Moscow, Russia, who is making a study of matters concerning navigation.

The Montreal Harbor Commissioners have inaugurated a police force for duty within the limits under their jurisdiction. The present force of 20 will probably be increased to 40 by the fall.

The Quebec Board of Trade has pointed out to the Minister of Public Works the desirability of establishing a ship building and repair plant in connection with the projected Government dry dock at Lauzon, Que.

The steamboat Duchess of York, owned by the King Edward Park Co., Montreal, struck a rock while passing through the Lachine Rapids, Aug. 2, cutting a hole in her hull. The damage was repaired temporarily, and the passengers landed safely at Montreal, after which she was dry docked for repairs.

It is reported that the Montreal Harbor Commissioners have decided not to proceed with the addition of 250 ft. to the outer ends of the Alexandra, Jacques Cartier and King Edward piers, until the entrance to the Lachine Canal has been remodelled, on the ground that the work would only add to the congestion of the upper harbor.

A number of members of the Montreal Board of Trade, Chambre de Commerce, and the Canadian Manufacturers' Association, on Aug. 12, presented a large silver punch bowl to each of the ex-members of the Montreal Harbor Commission, G. W. Stephens, L. E. Geoffrion and C. C. Ballantyne, in recognition of their work towards the development of trade through the Montreal harbor.

The Crown Steamship Co., owners of the s.s. Crown of Cordova, has taken proceeding in the Admiralty Court, for the arrest of the s. s. Lady of Gaspe, on a claim for $35,000 as damages, arising out of the collision. It is reported that the Magdalen Islands Steamship Co., owner of the s. s. Lady of Gaspe, will enter a counter action. The Dominion Wreck Commissioner held an enquiry at Quebec, Aug. 7.

Arrangements have been completed for the diversion of small vessel traffic from the ship channel in the St. Lawrence, to the north channel, thus relieving considerable congestion of small craft, which has for some time been more or less of a menace to the safe navigation of the channel by ocean going vessels. The north channel is being well lighted, twelve range lights having been established between Repentigny and Contrecoeur.

The harbor police force, inaugurated by the Montreal Harbor Commissioners, commenced duty within the harbor limits, Aug. 12. It will not in any way interfere with the city police, but will, in addition to regulating traffic on the wharves, act in conjunction with them in dealing with general delinquents. The uniform adopted is of khaki, with brass buttons, and cap bearing the Commissioners' crest.

It is reported that the Department of Marine has decided to order an additional ice breaking steamship for the St. Lawrence service, approximately of the following dimensions: Length 275 ft., breadth 57½ ft., depth 30 ft., with engines of about 8,000 i. h. p. It is stated that the forward construction will be similar to that which is being adopted on the ice breaking car ferry steamship for the Northumberland Strait, now under construction in England.

The Montreal Harbor Commissioners have decided to build another elevator with capacity for about 3,000,000 bush. It is stated that it will be utilized specially for the export trade, in order to relieve the congestion caused by allowing grain to be stored in the others. It will be located in the east end of the harbor in such a position that grain can be taken in at one side and discharged on the other. The total capacity of the elevators in the harbor will then be raised to 10,732,000 bush.

The various works in the Montreal harbor are progressing satisfactorily. The concrete substructure for the addition to the Harbor Commissioners' elevator is approaching completion, and the concrete for the superstructure will be run in during September. The concrete superstructure for the G. T. R. elevator is completel to a considerable height, and work is being rushed day and night. The high level wharf at sec. 26 is about completed, and foundations have been laid for another similar one.

The Department of Marine has established a lighthouse on the north shore of the Ottawa River, on the sandy point about a quarter of a mile below Pointe au Chene village, and it is directed that upbound vessels will use this light as a leading mark from a point abreast of L'Orignal wharf, in the alignment of the light and Pointe au Chene church, until clear of Furniss Point, and from thence a more westerly course should be taken so as to pass about a quarter of a mile south of the light whence McTavish Point light will be used as a leading mark.

The s.s. Lady of Gaspe, owned and operated by Bouchard Bros., Quebec, to Gaspe ports, was rammed by the British s.s. Crown of Cordova, while at anchor, during a fog, near Cap Madeleine, July 28. The passengers were landed safely at Cap Madeleine, and the vessel beached. She was released July 31, and went to Quebec under her own steam in charge of the wrecking tug Lord Strathcona. She was built at Glasgow, Scotland, in 1877, and has borne the names Restigouche and Rathlin. She is screw driven with engine of 180 n.h.p., and her dimensions are, length 229.7 ft., breadth 31 ft., depth 16.1 ft.; tonnage, 1,189 gross, 705 register.

Ontario and the Great Lakes.

The Pelee Island Transportation Co. is having a steamboat built at Collingwood.

The ice breaking steel steam tug,

[illegible]

Manitoba, Saskatchewan and Alberta

[illegible]

British Columbia and Pacific Coast Marine

[illegible]

the construction of an extension to the breakwater at Upper Salmon River, and to Sept. 8, for the construction of a wharf in Victoria harbor.

The Dominion Government has awarded contracts to the Pacific Dredging Co., for $158,200, for dredging in Pitt River, and to Broley and Martin, New Westminster, for $83,500, for the completion of construction of a jetty at Steveston.

Press reports from New Westminster state that the Dominion Public Works Department has arranged for a survey of the Fraser River between Mission and Hope, with a view to clearing the channel and carrying out some dredging work.

The New Westminster city dredge John A. Lee, was launched there, July 30. It is the first of the city's dredges to be built locally, and it is expected it will be ready for operation about October. The dimensions are, length 100 ft., breadth 40 ft., depth 7½ ft.

The Norwegian s.s. Herakles was drydocked at Esquimalt, early in August, for examination after she grounded in the Fraser River, when just completing her voyage from Sydney, N. S., to Port Mann, B. C., with rails for the Canadian Northern Ry.

The C.P.R. s.s. Princess Maquinna sailed from Victoria, July 25, on her maiden trip to northern ports. George Bury, Vice President, was present when she left, while J. W. Troup, Manager, British Columbia Coast Service, went with her to Holberg.

Twenty-four Inch Steel Hydraulic Dredge, Port Nelson.

The s.s. Rupert City, formerly owned by the Marine Transportation Co., Vancouver, was sold at Seattle, Wash., Aug. 9, by order of the Federal Court, to N. C. Hardie of Vancouver, for $16,000, the value of the vessel being stated at $60,000. She was built at Barrow in Furness, Eng., in 1886, and is screw driven by engine of 300 n. h. p. Her dimensions are, length 310.3 ft.; breadth 38.1 ft.; depth 25.2 ft.; tonnage, 2,536 gross, 1,640 register.

The Department of Marine has placed two fixed red lights, 6 ft. apart vertically, on the breakwater under construction at the entrance to Victoria harbor, extending out westerly from Ogden Point on the east side of the entrance. These lights are placed on a dolphin about 1,000 ft. out from Ogden Point, and will be moved out as the work progresses, to show its extremity. The lower light will be elevated about 20 ft. above high water.

The Dominion Government fishery cruiser Malaspina was launched at Dublin, Ireland, recently, and a second one will follow shortly. These two vessels are for service on the Pacific coast. They are divided by transverse and longitudinal bulkheads into 20 water tight compartments. The propelling machinery will be triple expansion engines supplied with steam at 180 lbs. by marine type boilers equipped with Howden's forced draught. Their dimensions are, length, 162 ft.; breadth 27 ft.; moulded depth, 13 ft. 11 ins.

Canadian Notices to Mariners.

The Department of Marine has issued the following:—

249. July 15. Atlantic Ocean to head of the Great Lakes, weather probabilities communicated from wireless telegraph stations.

250. July 16. Ontario, Georgian Bay, east side, Roberts Island, Honey Harbor channel, buoys established.

251. July 16. Ontario, Georgian Bay, east side, eastern approach to Parry Sound, buoys established.

252. July 17. New Brunswick, south coast, Bay of Fundy, entrance to St. John, shoal being dredged, beacon light and fog bell to be removed, gas buoy to be placed.

253. July 17. Nova Scotia, Cape Breton Island, west coast, entrance to eastern harbor, Cheticamp, buoys established.

254. July 17. Quebec, River St. Lawrence, Quebec harbor, Diamond harbor, piers off Lampson Cove, pole lights.

255. July 18. Quebec, River St. Lawrence below Quebec, Stone Pillar lighthouse, lantern damaged by fire, temporary light.

256. July 18. England, southwest coast, Scilly Isles, Bishop Rock light, alteration in period.

257. July 19. British Columbia, Vancouver Island, southeast coast, Victoria harbor entrance, Ogden Point, breakwater under construction, lights.

258. July 23. Quebec, Ottawa River, Pointe au Chene, lighthouse established.

259. July 23. Ontario, Lake Ontario, Toronto, gas buoy placed temporarily.

260. July 23. United States of America, Lake Superior, Manitou light station, characteristic of light changed and intensity increased.

261. July 23. United States of America, Lake Superior, off east end of Isle Royale, Blake Point, gas and bell buoy established.

262. July 24. Quebec, River St. Lawrence, Green Island, change in character of light.

263. July 28. Prince Edward Island, east coast, Murray harbor, bell buoy established, list of buoys.

264. July 31. British Columbia, weather probabilities communicated from wireless telegraph stations.

265. July 31. Quebec, River St. Lawrence, Lake St. Louis, change in position of Lachine gas buoy.

266. July 31. Ontario, Lake Ontario, Oakville, change in character of light.

267. July 31. Ontario, Lake Erie, Port Colborne, change in characteristic of front range light.

268. Aug. 6. New Brunswick, south coast, Letite Passage, entrance to Letite harbor, gas and bell buoy established.

269. Aug. 6. New Brunswick, south coast, Bay of Fundy, Sisters Rocks, can buoy to be replaced by bell buoy.

270. Aug. 6. Nova Scotia, Chignecto Channel, Cumberland Basin, westward of Amherst Basin, change in position of buoy.

271. Nova Scotia, south coast, Mahone Bay, Tanner Pass, Tanner Island, lighthouse established.

272. Aug. 11., Quebec, Gulf of St. Lawrence, Gaspe coast, Barachois de Malbaie, change in position of pole light.

273. Aug. 11., Quebec, River St. Lawrence below Montreal, Repentigny, change in position of range lights.

274. Aug. 12., Ontario, Detroit River, Ballard Reef channel, temporary changes in positions of gas buoys.

275. Aug. 12., Ontario, Lake Huron, north channel, chart, Meldrum Point to St. Joseph Island, issued.

276. Aug. 12. United States of America, River St. Mary, Brush Point range light station, new structures erected and changes made.

277. Aug. 13. Nova Scotia, Bay of Fundy, Lurcher shoal, lightship to be removed from her station temporarily for repairs.

278. Aug. 13. Quebec, Gulf of St. Lawrence, off Fame Point, submarine bell buoy to be placed.

Suction Dredge for Dominion Government Harbor Work in Hudson Bay.

A description of the new 24 in. suction dredge for harbor work in Hudson Bay, appeared in Canadian Railway and Marine World for July. The first work on this dredge was begun in April last, and as the work was required to be completed by August in order that the dredge might be towed to Hudson Bay before severe winter set in, extraordinary means had to be applied to push forward the work. The Polson Iron Works, which had the contract, completed the task in the remarkably short time of 100 working days, the dredge leaving Toronto for the far north on Aug. 9. following the St. Lawrence route to Sydney, and thence along the Labrador coast line into Hudson Bay.

Briefly, the dredge, which is illustrated on this page, is 180 by 43 ft., weighing complete 1,200 tons. It is divided into six watertight compartments. In the forward end of the hold is a 24 in. suction pump, direct connected to a triple expansion engine, supplied from two Scotch boilers. A cutter arm is carried on the forward end by shear legs, with the cutter driven from a small vertical engine alongside on the forward deck. The discharge from the pumps is through the rear of the dredge to a chain of floating pipes. An interesting feature of the dredge is a completely equipped machine shop. The complete control of the dredge is from the cabin on the forward bridge.

Insurance Rates on the Atlantic Route.

[illegible] more into conformity with those charged [illegible]

[illegible] Canada [illegible]

[illegible] of [illegible] various [illegible]

[illegible]

The above rates are in shillings per [illegible] as under 3%, accidents to crews, etc.

It would appear from the figures given [illegible] the rates on hulls since 1903. The rates on vessels trading between United States ports and the United Kingdom for [illegible]

[illegible]

It will be noted from this that the rates on the Allan Line vessels are the same in each case, Montreal being the chief Canadian port in the summer, and [illegible] Withy, and Manchester Liners, are also the same for Canadian ports as for U.S. ports, there being a reduction of 28½% in the Canadian rate, and about 5% in the U.S. rate, during the past 10 years. No practical comparison can be made in the cases of the other companies, as so many conditions, comprising ownership, age of vessel, etc., enter into the making of a rate. The rates on cargoes, and more especially on grain, are perhaps of more direct importance to the Great Lakes trade, as it is claimed that that is the cause of such a large proportion of Canadian grain passing through U.S. channels. The average season rate of insurance on grain from the St. Lawrence to United Kingdom ports, with the exception of Manchester, was 25½c for each $100 insured, the Manchester rate [illegible] and for tramp steamers with full cargoes of grain, 61c. As against this, the rates, via New York, Boston, etc., were 15c in first class vessels, 17½c in second class vessels, and 50c in tramp steamers with full cargoes of grain. Since 1909, when the rate on the St. Lawrence was [illegible] for Manchester [illegible] for tramp steamers 80c, and the U.S. port rates 17½c and 20c, for first and second class vessels respectively, and 50c for tramp steamers, there have been reductions of 9½c in the St. Lawrence rate, 6½c for Manchester, and 19c for tramp steamers; and in the U.S. rate a reduction of 2½c, the rate for tramp steamers remaining stationary. Although this comparison of rates serves a certain purpose, it should not be taken as a perfectly fair one, as towards the close of the St. Lawrence navigation season, when there is apt to be a rush of grain shipments, the insurance rate is increased materially, while, of course, the U.S. rate is the same all the year round. Thus, during the 1912 season, the rates were as follows:—May 1 to Sept. 15, 25c; to Sept. 30, 27½c; to Oct. 15, 30c; to Oct. 20, 37½c; to Nov. 15, 40c; and to the close of navigation, 45c; all to Liverpool. On the winter routes from Halifax, or St. John, the rate is 22½c, against the U. S. rate of 15c, while the rate on Furness Withy and Manchester Liners for 1912 was 30c, exactly 100% higher than the U.S. rate.

During the 1912 lake navigation season, approximately 113,000,000 bush. of grain were shipped from Fort William and Port Arthur by vessels, and of this total 41% passed through U.S. channels. The estimated value of grain shipped from Montreal during 1912 is $25,000,000, which, if insured at the average rate in 1900 of 56c, would have cost $140,000; and at the 1912 rate of 25½c, $63,750, a saving in 12 years of $76,250. The extra cost of shipping via Montreal, as against New York, on the same basis, would have been $90,000 in 1900, and $26,250 in 1912, showing a reduction in extra cost of [illegible]

List of Steam Vessels Registered in Canada during July, 1913.

[illegible]

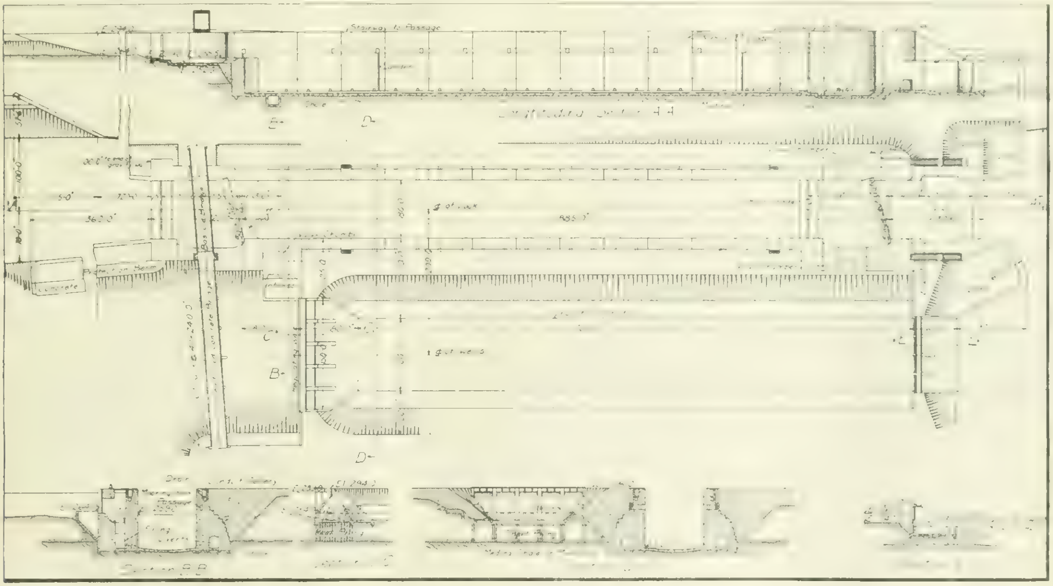
List of Sailing Vessels and Barges Registered in Canada during July, 1913

[illegible]

The New Welland Ship Canal Locks.

A description of the new Welland Ship Canal appeared in Canadian Railway and Marine World for July, in which the general canal scheme was outlined, and the general details discussed in comparison with the present and old canals. It will be recalled that the new canal will follow a course from Lake Ontario, where the entrance is 2¾ miles east of the present entrance at Port Dalhousie, through to Thorold, where the course of the new canal will be the same as that of the present one, with the exception of a couple of short stretches which have been changed for the reasons there explained.

The accompanying illustration shows lock 1, which is to be located directly on the shore of Lake Ontario, at the northerly end of the canal. This lock is typical of all the other single locks in all the essential particulars. The locking capacity of the canal will be 800 by 80 ft., with a draught of 30 ft., but to allow for the swing of the gates, the actual length of the lock between gate hinge pivots will be 885 ft., the length of the lock construction extending even beyond that, with a total length of 1,140 ft., not including approach wall. From the bottom of the lock to the top of the walls is a height of 84.5 ft. These dimensions give some idea of the stupendous character of the project.



Typical Lock of the New Welland Ship Canal.

The depth to which the canal structure is carried simplified the foundation problem, as the lower portion of the lock requires rock excavation, directly on which the lock is built. The rock on which locks 1, 2, 3 and 4 are founded is Medina Shale or Mudstone. Locks 5 and 6 are founded on sandstone, and lock 7 on gray shale. At locks 2 and 3 the lock excavations will not extend down to rock, but the side wall foundations will be carried down to that point, thus making the walls 100 ft. high.

The locks are to be constructed of mass concrete throughout, built in sections of 60 ft., between each of which there will be an expansion joint, consisting of a dovetail of concrete extending the full depth of the walls, and in the centre of the dovetail there will be a strip of copper of Z section, connecting the two sections, and forming a water tight division, to prevent seepage of the water through the joint.

In the top of the side wall there will be a 5 by 9 ft. tunnel, the length of the lock. This tunnel will be floored so as to form a shallow chamber below for the electric cables, with the portion above the flooring for passing from end to end of the lock for the workmen. Below this combined tunnel there will be a 4 ft. square tunnel on each side of the lock, extending its full length, for drainage purposes.

With a floor level 30 ft. below the top of the lock walls, there is to be a 4 by 7 ft. tunnel extending the full length of the wall, with openings leading inward to the lock at every 100 ft., in which will be mooring hooks for berthing vessels passing through the lock. This tunnel is to be reached by stairways through the concrete near each end of each tunnel, from the surface above. The introduction of this tunnel is a novel feature of lock design, and should result in a considerable saving in locking time, by the expeditious manner in which the vessel can be secured in the lock. The lift of each of the locks is to be 46.5 ft., and the top of the lock wall will be 5 ft. above the water level when the lock is filled. A loaded vessel will have its deck possibly not more than 10 ft. above the water level when entering from below. Thus the deck will be upwards of 40 ft. below the top of the lock wall, which is too great a height to heave a rope. With the mooring hooks in the wall openings at every 100 ft., the rope can be thrown to an attendant, who will [illegible] rises, the line will be changed to the [illegible] from the lock.

The filling and emptying of the locks have been carefully worked out, and it is expected that these operations will be carried out smoothly without the disturbance to the water in the upper reach of the canal as happens in locks of the usual design. Above each lock there is to be a considerable pondage area. Extending up the canal 360 ft., there will be a concrete berm, separating the channel of the canal from the main part of the pondage area, from which the water to fill the lock will be drawn through a valve chamber at the head of the lock from the side water, leaving the water in the channel undisturbed. At the bottom of the side walls of the lock there will be a 13 by 16 ft. horseshoe tunnel the length of the lock, with 3 ft. square openings leading from these two tunnels into the lock at every 30 ft. This will feed the water into the tunnel uniformly through the 800 ft. length of the lock, balancing the pressure in the lock, disturbing the vessel in the lock a minimum amount. Connection from the valve chamber to the horseshoe tunnel on the side opposite to the valve chamber will be through a 13 by 15 ft. square tunnel of concrete, passing under the lock. The valves will be of the swing type, requiring a minimum time for opening. The emptying of the lock will be through the same side tunnels, which will lead through valve chambers, one on each side of the lock at the lower end, and out through the channel at the lower end.

A novel departure has been made in the gate design, which is of the single leaf type. It is customary to have them of the double leaf type, mitring at the centre, but a number of accidents have occurred with their use, through vessels from below striking one of the gates sufficiently hard to open it enough to al-

[illegible]

Turbine Steamship for Canadian Pacific Railway Bay of Fundy Steamship Service

[illegible]

[illegible]

[illegible]

adjacent to the dining saloon and on the lower deck there are two large rooms for ladies and children.

Second class accommodation is provided at the after end of the vessel, and is divided into dining room, ladies' rooms and sleeping apartment, with promenade space on the shelter deck. There are two dining rooms, one being for ladies, providing accommodation for [illegible] passengers. The sleeping apartment on the lower deck is a large room with berths for 28 passengers, the upper berths folding down to form the backs of couches during the day.

On account of the comparatively short trips for which this vessel was built, and for which she will be utilized on this side, the bunker space is small, and it was therefore necessary to arrange that she be towed across the Atlantic. The tug ran short of fuel, owing to rough weather, and was compelled to leave the vessel off Newfoundland and put in at St. John's, July 27, for coal. The Reid Newfoundland Co.'s s.s. Kyle, and the tug Blackcock, eventually picked her up, and the journey to Halifax was completed in safety.

The Dominion Government Dry Dock at Lauzon, Quebec.

As mentioned in previous issues of Canadian Railway and Marine World, the Dominion Government has decided that the construction of a dry dock in the Port of Quebec shall be undertaken as a Government work, and has awarded the contract to M. P. and J. T. Davis. The site, which has been acquired by the Government, is located opposite the city of Quebec on the south shore of the St. Lawrence, in Lauzon Village, two miles east of Levis, and close to the existing Government dry dock.

The dock will be of the following dimensions:—length from caisson stop to head wall, 1,150 ft.; width of entrance, 120 ft.; depth on sill at ordinary high water spring tides, 40 ft.; it will be divided in two parts, 650 and 500 ft. respectively. The outer entrance will be closed by a steel rolling caisson, and a ship, or floating caisson will close the inner entrance. The ship caisson will also fit the outer face of the outer sill, so as to facilitate repairs to the rolling caisson, when required. The dock will be emptied by three centrifugal pumps, each having a capacity of 60,000 galls. a minute, operated by electric motors, supplied with current by generators revolved by three steam turbines, steam being furnished by eight water tube boilers, capable of supplying 3,600 h.p. The rolling caisson will also be operated by electric motor.

The general construction work will include the construction of a cofferdam to surround the whole of the entrance walls of the dock, furnished with the necessary pumping machinery to keep the enclosed area dry; the excavation in earth and rock over the area to be occupied by the dock, including all drains, pump wells and sumps; the construction of concrete walls with altars, stairs, floor, manholes, culverts, pump chamber walls and caisson chamber; the building of granite copings, caisson stops, facings to culvert outlets and inlets, facings to timber slide entrance, etc.; the construction and placing of the steel rolling caisson with rollers and one steel floating caisson, complete with pumps, electric motors, valves, etc.; the construction and furnishing of the pump house, with three pumps, each of 60,000 galls. a minute capacity, power house with eight steam boilers with [illegible] [illegible] and [illegible] [illegible] [illegible] three steam turbines and four electric generators, the supply of keel blocks and [illegible] [illegible] with chains and tackle, and all requisite bollards and capstans, the furnishing of all materials, and the building of a brick chimney 180 ft. high, two entrance piers [illegible] ft. long, [illegible] ft. wide, to [illegible] of water at low tide, the dredging of a specified area to a depth of 30 ft. at low tide, and the installation of underground electric wiring and of electric light wiring in the buildings.

The Descriptive Declarations of Cargoes at Montreal.

The Shipping Federation of Canada sent a deputation consisting of A. A. Allan, Jas. Thom and Thos. Robb to Ottawa recently, to protest to the Government against the enforcement of a bylaw of the Montreal Harbor Commissioners, which provides as follows:—"The agent of every vessel arriving in harbor, the cargo of which is subject to wharfage rates, shall within four days after the arrival of the vessel, deposit in the office of the Harbor Commissioners one certified copy of the manifest of said vessel, giving the names of the consignees, full description of the goods and the weight or measurement thereof, according as the goods were carried by water, by ton weight or ton measurement."

The deputation was received by the acting Minister of Marine, who heard the objections, which covered the following points:—The bylaw was passed by the last Commissioners, who, after hearing objections to it voiced by the Shipping Federation of Canada, did not enforce it, and the Federation has taken up the matter with the present Commissioners on several occasions, but they do not seem inclined to rescind the bylaw. The deputation are of opinion that as the information is for statistical, and not for revenue purposes, it should be obtained by the Commissioners' staff. The respective shipping companies have made attempts to carry out the provisions of the bylaw, but find it impossible to do so, as they have no means of obtaining the information other than from the bills of lading. They also think that the in[illegible] [illegible] [illegible] [illegible] [illegible] come law.

The Furness Line's Steamship Digby.

The steamship Digby, which has recently been placed in service between Liverpool, Eng., St. John's, Nfld., and Halifax, N.S., has been specially built for the passenger, fruit and general cargo trade, and should the business warrant it, other vessels of a similar type will be added to the fleet as required. She was built at West Hartlepool, Eng., and has the following chief dimensions:—length over all 365 ft., length between perpendiculars 350 ft., breadth, extreme, 50 ft., depth moulded to upper deck 25½ ft., depth moulded to shelter deck 34 ft. 1 in. She is classed 100 A1 shelter deck class, and is equipped to fulfil the requirements of the British Board of Trade, with a full passenger certificate. The hull is divided into watertight compartments by six transverse watertight bulkheads, and the forward part is strengthened for ice service. A special system of mechanical ventilation is provided to the holds and 'tween decks for the proper preservation of fruit and similar cargo. The passenger accommodation, for 58 first class, and 32 second class, is arranged, the former, amidships, and the latter aft. Complete installations of electric light equipment and refrigerating machinery are supplied. The propelling machinery consists of triple expansion engines with cylinders 28, 46 and 77 ins. diar. by 48 ins. stroke, supplied with steam by four single ended boilers 16½ by 12 ft., at 180 lbs. pressure under Howden's forced draught.

THE GOLDSCHMIDT THERMIT CO. announces that its San Francisco office has been changed from 432-436 Folsom Street, to 329-333 Folsom Street.

Sault Ste. Marie Canals Traffic.

[illegible]

Articles			Canadian Canal	U.S. Canal	Total
[illegible]	East bound	[illegible]	[illegible]	[illegible]	13,435
[illegible]		[illegible]	[illegible]	[illegible]	[illegible]
[illegible]		[illegible]	[illegible]		5,760
[illegible]		[illegible]	[illegible]	[illegible]	[illegible]
Iron ore	"	Short tons	[illegible]	[illegible]	[illegible]
[illegible]				[illegible]	[illegible]
[illegible]		[illegible]	1,787	[illegible]	[illegible]
[illegible]		[illegible]			[illegible]
[illegible]		[illegible]	[illegible]	[illegible]	[illegible]
[illegible]		[illegible]	[illegible]	[illegible]	[illegible]
[illegible]		[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	West bound	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]		[illegible]	[illegible]	[illegible]	[illegible]
[illegible]		[illegible]	[illegible]		[illegible]
[illegible]		[illegible]		400	[illegible]
[illegible]		[illegible]	[illegible]	[illegible]	47,198
[illegible]		[illegible]	[illegible]	[illegible]	[illegible]
[illegible]		[illegible]	7,665	[illegible]	[illegible]
[illegible]		[illegible]	[illegible]	[illegible]	[illegible]
[illegible]		[illegible]	[illegible]	5,611	[illegible]
[illegible]		[illegible]	1,357	[illegible]	[illegible]
[illegible]		[illegible]	[illegible]	4,752,542	[illegible]
[illegible]		[illegible]	[illegible]	[illegible]	[illegible]
[illegible]			[illegible]	[illegible]	[illegible]
[illegible]			[illegible]	[illegible]	[illegible]

Trade and Supply Notes.

[illegible] the articles referred to, and in publishing the same we accept no responsibility. At the same time we wish our readers distinctly to understand that we are not paid for the publication of any of this matter, and that we will not con- [illegible]

THE NORTHEY-SIMMEN SIGNAL Co., Toronto and Indianapolis, has issued an illustrated booklet describing its dispatching and signalling system.

[illegible] appointed J. C. Tipton as Canadian re- [illegible] nessy Building, Montreal, to succeed the [illegible]

THE HALL SWITCH & SIGNAL CO. [illegible] Richards, Sales Engineer, in charge, to handle its Canadian business.

THE AMERICAN LOCOMOTIVE CO. has issued bulletin 1014, "Most Powerful Locomotive in the World," describing and illustrating a Mallet with 115,000 lbs. [illegible] built for the Virginia Ry.

THE NICHOLSON FILE CO., Port Hope, Ont., has issued the 8th edition of "File Filosophy," which contains valuable matter on practical filing. Super- [illegible] of holding the file and handling the work, will find them clearly explained. A copy will be sent to any applicant, free.

THE BROWN HOISTING MACHINERY Co., Cleveland, Ohio, has issued "Brown Hoist Locomotive Cranes, Catalogue 1," giving a general description of its locomotive cranes, portal pier cranes, traction cranes and work car cranes, a profusion of illustrations showing how [illegible] manufacturers, lumbermen, [illegible] dealers, etc. Among the illus- [illegible] one of a 5 ton electric work car crane in use by the Toronto Railway, and one of a 15 ton locomotive crane handling structural material for McGregor and McIntyre, Ltd., Toronto.

[illegible] nounces that vanadium cast steel frames are specified on 75 mikado type locomotives recently ordered by the G.T.R. of which 50 will be built by the Montreal Locomotive Works, and 25 by the Bald- [illegible] load [illegible] 00 lbs., giving an aver- [illegible] 0 lbs. per wheel on the rail.

THE GENERAL RAILWAY SIGNAL [illegible] and [illegible] and [illegible] engineer and those who are in any way connected with railway signaling. Its free distribution is limited to railway officials and those connected with the installation, operation and maintenance of signals. To others the price is $3.

Transportation Associations, Clubs, Etc.

[illegible] those [illegible]

Canadian Car Service Bureau. J. Reilly (act- [illegible]

Canadian Electric Railway Association. Acton [illegible]

Canadian Freight Association (Eastern Lines), [illegible] real

Canadian Freight Association (Western Lines), [illegible]

Canadian Railway Club. J. Powell, St. Lam- [illegible] each month, 8.30 p.m., except June, July and [illegible]

[illegible]

Canadian Ticket Agents' Association. E. de la [illegible]

Central Railway and Engineering Club of Canada. C. L. Worth, 409 Union Station, Toronto. Meetings at Toronto 3rd Tuesday each [illegible]

Dominion Marine Association. Counsel, F. [illegible]

Eastern Canadian Passenger Association. G. [illegible]

Engineers' Club of Montreal. R. W. H. Smith, [illegible]

Engineers' Club of Toronto. R. B. Wolsey, 94 [illegible]

Great Lakes and St. Lawrence River Rate [illegible]

International Water Lines Passenger Associa- [illegible]

Niagara Frontier Summer Rate Committee. [illegible]

Nova Scotia Society of Engineers. A. R. Mc- [illegible]

Quebec Transportation Club. J. S. Blanchet, Quebec.

Ship Masters' Association of Canada. H. O. [illegible]

Shipping Federation of Canada. T. Robb, 526 [illegible]

Western Canada Railway Club. W. H. Rose [illegible]

Transportation Conventions in 1913.

[illegible]

Sept. 8-12.—Roadmasters' and Maintenance of Way Association, Chicago, Ill.

[illegible] Painters' Association of U.S. and Canada, Ottawa, Ont.

[illegible] Officers, New York.

Oct. 8.—Association of Water Line Accounting Officers, Philadelphia, Pa.

Oct. 14.—Railway Signal Association, Nashville, Tenn.

Oct. 14, 15.—American Association of General [illegible] ville, Tenn.

Oct. 15-17.—American Association of Railway Surgeons, Chicago, Ill.

Oct. 18-24.—Association of Railway Electrical Engineers, Chicago, Ill.

[illegible] Building Association, Montreal.

Oct. 23-25.—American Association of Dining Car Superintendents, Buffalo, N.Y.

Nov. 19.—American Railway Association, Chi- [illegible]

During June there were 9 fatal and 7 non fatal accidents to employes in the course of their work in connection with the navigation of Dominion vessels. Of the fatalities, 3 were due to the sinking of a schooner in a gale, 4 to falling into holds of vessels, and one each to falling overboard and to the collapse of a freight shed.

Canadian Pacific Railway Company

NOTICE TO SHAREHOLDERS

The Thirty-second Annual General Meeting of the Shareholders of this Company for the election of Directors to take the places of the retiring Directors, and for the transaction of business generally, will be held on Wednesday, the first day of October next, at the principal office of [illegible]

The Common Stock Transfer Books will be closed in Montreal, New York and London at 1 p.m., on Saturday, the thirtieth day of August. The Preference Stock Books will be closed in London at the same time.

All books will be re-opened on Thursday, the second day of October.

By order of the Board,

[illegible]

INTERCOLONIAL RAILWAY

TENDER

S[illegible] Double Tracking Line Between St. Romuald and Chaudiere Curve," will be received up to and including **Monday, September 8th**, for double tracking the line between St. Romuald and Chaudiere Curve, P. Q.

[illegible] Station Master's Office, Levis, P. Q., at the Chief Engineer's Office, Moncton, N.B., and at the office of the Assistant Deputy Minister and Secretary, Department of Railways and Canals, Ottawa, Ont., at which places forms of tender may be obtained.

All the conditions of the specifications must be complied with.

[illegible]

Quality Not Quantity

Is the reason why we make our Replacers out of the BEST STEEL PLATE instead of cast metal. The distance from caboose to head end of train is getting longer, and when a man carries a pair of our Replacers that distance he is not all used up, but ready to rerail his car or locomotive.

The pair this man is carrying is our Standard No. 1, made of 9-16 plate, weight 164 lbs. per pair, and guaranteed to carry 200 tons.

We make smaller sizes, No. 3 for Mine Work, Electric Motors, Mine Engines and Rope Haulage; weight 58 lbs. per pair.

Do not fool yourself. If you want efficiency and quick service give your men a tool they can handle, that will do the work and that pleases them.

SEND FOR CIRCULAR SHOWING USERS 70,000 PAIR IN SERVICE

The Alexander Car Replacer Manufacturing Co.

SCRANTON, PA

Canadian Railway and Marine World.

October, 1913

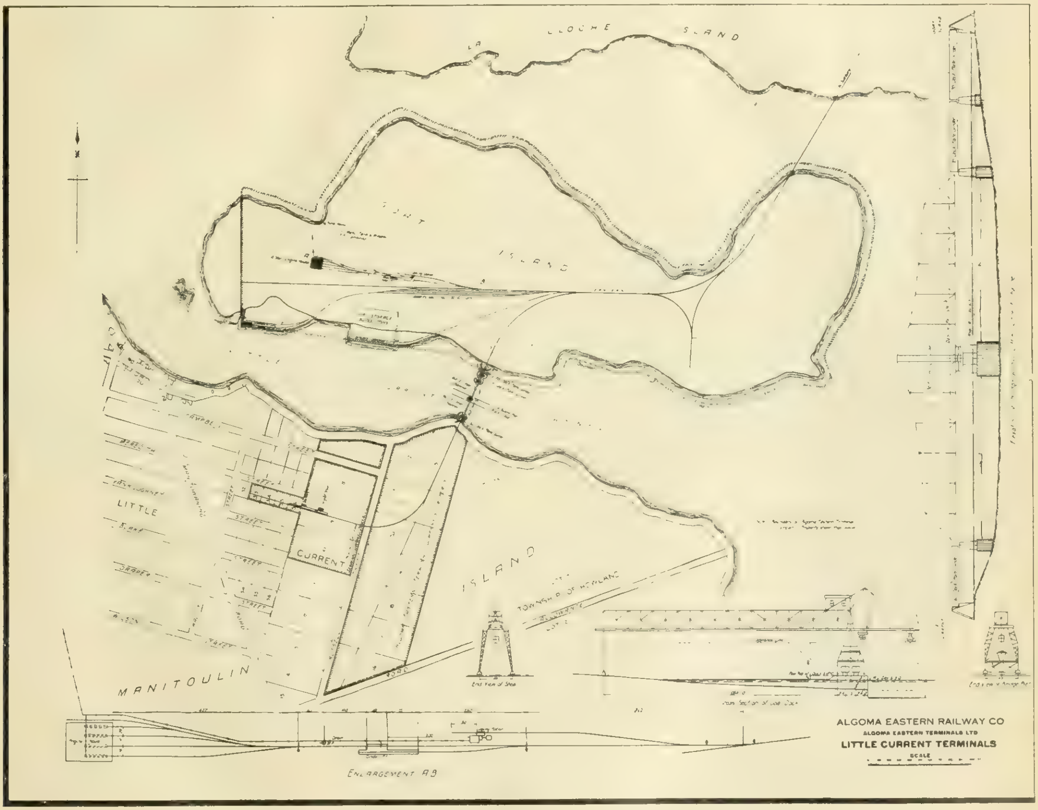
Algoma Eastern Railway Terminals at Little Current.

By R. S. McCormick, M. Am. Soc. C.E., Chief Engineer.

The Algoma Eastern Ry. Co. has its line completed as far as the site of the terminals on Goat Island, opposite Little Current, on Manitoulin Island, Ont. The terminal facilities are now being pushed to completion this autumn and include some interesting features. The work covers the extension of the main line from Goat Island, the site of the yard and docks, over the boat channel to Manitoulin Island, entering Little Current on the east side of the town. A small station building of frame construction, together with a small local freight house, is situated just at the edge of the town, easy of access and convenient for local business.

The bridge crossing the channel is made up of two 70 ft. deck plate girder approach spans on the Goat Island side, a 368 ft. through draw bridge span and a 60 ft. approach span on the Manitoulin side, making a total length between abutments of 573¾ ft. The clear height above meanwater level is 17½ ft. and there is a clear opening for boats of 160 ft. each side of the centre pier. The foundations consist of two wing abutments, three intermediate piers and a pivot pier. These are of concrete, there being a total of 2,570 cu. yds. of concrete in the whole foundation. The protection, or rest pier, is composed of timber cribs filled with stone, extending at right angles to the centre line of the bridge tangent. These cribs are built of round hemlock timber, well drift bolted together, extending to within 2 ft. of low water level; above this elevation square B.C. fir timber is used. The water is 24 ft. deep at this centre pier, the bottom is solid limestone rock, requiring very little work to prepare for sinking the cribs. At the pier points and abutment sites a little preparation, consisting of shooting up the bottom to level up and roughen up the smooth rock was done to guard against any tendency of the piers sliding. The foundation work was done under contract by the Foundation Co. on a cost plus a fixed sum basis. The work was let Sept. 27, 1912, and completed May 1, 1913—and is a very fine job of pier work. The piers in deep water were built inside cofferdams of heavy timber, concrete being deposited in the centre pier to within 2 ft. of low water, where the neat work begins. Gravel and broken stone were both used for the coarse aggregate for the concrete, care being taken to heat all material and the water in cold weather. While the channel where this structure is situated did not freeze up last winter, due to the swift current, ice formed at both ends of it and caused considerable trouble by breaking away and running through it. The current here runs both ways, depending upon wind conditions, and sometimes reverses its direction several times in 24 hours, so that great care had to be exercised in handling the dams and cribs.

The superstructure is of steel, from plans



Little Current Terminals, Algoma Eastern Railway.

made by Boller, Hodge and Baird, consulting engineers, New York, and is designed under the specifications of the Railways and Canals Department, for class 1 loading, and consists of one 368 ft. c.c. through draw span, with one 60 ft. and two 70 ft. over all deck plate girder approach spans, all single track, with one walkway. The approach spans are 6 ft. 6½ ins. and 7 ft. 6½ ins. deep out to out of flange Ls., which in all cases are 6 ft. 6 ins. with 14 in. cover plates. The girders are spaced 8 ft. c. to c. and are thoroughly braced with top and bottom lateral bracing and stiff end and intermediate cross frames. Transverse 10 in. I beams are riveted to the top flanges to form supports for the walkway.

The draw span is 368 ft. long, c. to c. of end bearings, with trusses spaced 18 ft. 3 ins. c. to c., the length being divided up into 12 panels of 30 ft. 2 ins. each with a central panel of 6 ft. over the pivot pier. The depth of truss varies from 30 ft. at the end to 57 ft. c. to c. of chords at the centre over the pivot pier. All members are designed to resist both tension and compression except members L4-U5, U5-U6, U6-U6, which sustain tension only and are made of eyebars. The end posts, top chords and main diagonal posts at the pivot pier are built of 21 in. web plates, 24 in. covers, 3½ [illegible] The lower chords from end to end are built of 20 in. web plates with 4-3½ by 3½ in. Ls and with 13 in. side plates where necessary. All intermediate diagonals, except where eyebars are used, are built of 18 or 20 in. web plates, with 4 Ls 3½ by 3½ in.; the verticals are built of a plate and 4-6 by 3½ in. Ls where they act as hangers and of 2-15 in. Ls where they act as post.

The floor system consists of stringers 53 ins. deep, riveted into the floor beams 66 ins. deep, which are in turn riveted into the verticals of the trusses. Top and bottom bracing is of Ls, designed for tension only in the case of the top laterals, and for both tension and compression in the case of the bottom laterals. Each portal consists of [illegible] in. Ls, forming a frame 3 ft. 9½ ins. deep with two plate braces. Transverse bracing at intermediate points consists of 4 Ls 5 by [illegible] the height of the trusses. The transverse [illegible] consists of frames similar to the intermediate transverse bracing, above the house, and in addition heavy kneebraces [illegible]

[illegible]

eight trailing wheels running on a cast steel track 25 ft. in diameter. The main rack circle and the track are cast together in 13 sections. The two main centre girders are 105 ins. deep out to out of Ls, with 8 by 8 in. flange Ls and 18 in. cover plate and carry the dead load of the span to the pivot girders 6.5 ins. deep resting on a steel casting which bears directly on the discs. While closed the ends of the trusses are supported by cast steel wedges, which are driven by the operating machinery so as to bring a dead load reaction under each end of each truss of 60,000 lbs., thus preventing the end from rising from its support under certain conditions of loading. Each truss is supported at the pivot pier by two wedges spaced 6 ft. apart, but which are so adjusted that they take live load only, the dead load being carried by the pivot. Both the end and the centre wedges are operated by worm gears driven by shafting from the operator's house, and protected by cast iron casing, which is so arranged that the gearing runs in a path of oil. The main pinion for swinging the span is cast steel 15 ins. in diameter keyed to the 7 in. main turning shaft, and suitable gearing is provided between this shaft and the engine shaft to give the required speed.

The power for turning the draw and for operating the end and centre-wedges is supplied by a 25 h.p. Fairbanks Morse gasoline engine, located in the operator's house above the tracks at the centre of the draw, the main shaft having a velocity of 220 r.p.m. and working the machinery through two friction clutches. The turning shaft and the wedge driving shaft are each provided with a jaw clutch, so that the power can be transmitted to each one as desired by moving the necessary lever. A safety device is provided for the wedge shaft, to prevent driving the wedges too far and injuring the latching machinery, consisting of a cross head connected by levers to the jaw clutch of the wedge shaft and so adjusted that when the wedges have been drawn far enough it will have moved sufficiently to disengage the jaw clutch and thus shut off the power from this shaft. The ends of the span when closed are held in position by a latch located at the centre of the end floor beams and which is so connected with the wedge shafting that it is lifted from its socket when the wedges are withdrawn. When the span swings, the latch strikes a projection on the socket casting and is lifted, thereby disengaging a trip, which allows it to drop to its original position, so that when the span is closing the latch rollers will mount the inclined sides of the latch casting on the pier and drop into the socket, thus firmly latching the span before the wedges are driven home. All lengths of truss members are corrected to bring the lower chords in a horizontal line with the bridge closed, and the wedges driven to give a 60,000 lb. reaction at end of truss. The computed drop in end of truss when wedges are withdrawn is 1.4 ins.

The Canadian Bridge Co. was awarded the contract for this job, and this part of the bridge is now being erected. Due to delays in delivery of material from the mill, the bridge company will not complete this erection until some time in October.

The work on Goat Island consists of a small yard, including a 4 stall rectangular house, of frame construction, on concrete foundations, with concrete pits, a concrete cinder pit, a 100 ton Fairbanks-Morse elevator coal chute, and a water station consisting of a 50,000 gall. tub on a 30 ft. tower, with a windmill extension for pumping, together with an auxiliary 5 h.p. gasoline pumper. Water is pumped into this tank and from thence discharged to a 10 in. Sheffield Johnson telescopic standpipe, and to the locomotive house and coal chute for service use and fire protection.

The docks consist of a coal dock and a commercial dock. The coal dock has 450 ft. frontage in the channel. It consists of timber cribs built up to an elevation of 5 ft above water. They are of round hemlock to 2 ft. below low water, and of square 12 by 12 in. B. C. fir above this elevation. They are framed in 100 ft. sections and sunk with rock. Afterwards they are filled to top with stone. These cribs are at present in 6 to 8 ft. of water. Arrangements are completed for dredging in front of the dock by the Dominion Government. After sinking these cribs, forming the face of the proposed dock area, filling will be deposited back of same to bring the area just above water level, forming a storage ground for coal. This storage space is planned to hold 80,000 to 90,000 tons of coal. Later extensions can be made to increase this.

A modern unloading and reclaiming coal handling plant is arranged for in connection with this dock, to be furnished and erected by the Brown Hoisting Machinery Co., of Cleveland, Ohio, and consists of an unloading and reclaiming bridge, of 300 ft. span, covering over the storage space, with a cantilever overhang at the front of 83 ft. One end of this bridge will be carried on a portal pier arranged to run on two tracks spaced 32 ft. centre to centre. Each track will consist of two lines of 100 lb. rail, spaced 2 ft. 4 in. centres, and the other end will be carried on a shear leg, arranged to run on a similar single track.

The front track of the portal pier will be laid on two lines of B. C. fir, 24 by 24 ins. in size, laid directly on the dock cribs, the other portal track will be also laid on two lines of 24 by 24 ins. timbers supported by short 12 by 12 in. cross ties laid on rock filling. These two pairs of rails will be tied together by long cross ties 12 ins. by 12 ins. by 40 ft. spaced 10 ft. apart along the dock front. The shear leg track will be laid on 24 by 24 in. timbers, supported by concrete pedestal piers spaced 10 ft. centre to centre.

The bridge will be of sufficient capacity to unload coal out of a boat at the rate of 200 tons an hour, including the cleaning up. The bucket will be of 124 cu. ft. capacity, and

Nose of Protection Pier ready to sink.

Pivot and Protection Pier.

the specifications call for a rate of 500 ft. a minute hoisting and 1,500 ft. a minute propelling capacity along the runway. The bridge will be capable of propelling itself along the track at the rate of approximately 50 to 70 ft a minute, depending upon the wind.

The portal structure at the dock end will be arranged to span two loading tracks spaced 13 ft. centres. A 40 ton bin will be supported directly over these tracks. The shear leg is designed so that a 40-ton receiving bin, together with the necessary shaker feed box and box car loader, may be added in the future if desired. At present it is not contemplated that other than railway coal will be handled here. This whole crane will be operated by steam. Only a single bridge will be erected now; later, if business warrants, the dock may be extended and another bridge added.

The commercial dock will be constructed on a similar plan to the coal dock, and will have a warehouse 36 by 80 ft. built on it, to which tracks will extend, as indicated on the plan. Considerable solid rock dredging will be required here to permit deep draught vessels to approach this dock.

The entire terminal work, excepting the erecting of the coal crane and the dredging, will be completed this autumn. The coal handling crane will be erected early next spring, in time to handle coal early in the season.

Concreting Pivot Pier, January, 1913.

Foundations complete, looking north.

The Foundation Co. is doing the above work on docks and terminal buildings on a percentage contract. The railway company's forces look after all track work and grading for same.

The Algoma Eastern Terminals, Ltd., is the corporate name of the company constructing these terminals. The writer is Chief Engineer, B. E. Barnhill, Sudbury, is Division Engineer, and J. R. Black, Little Current, is Assistant Engineer in direct charge of the work.

Locomotive Failures in Summer and Winter.

In a recent issue of a United States contemporary, attention was drawn to locomotive observations made on a road operating in that country. This road was rather astounded to find on investigation, that contrary to all expectations, the number and extent of its locomotive failures were considerably greater in summer than in winter. This led to an investigation of the cause, leading to the discovery that anticipated greater numbers of breakdowns in the winter, had led the officials to make greater preparations to ward off trouble, with the result that the number of breakdowns was less in winter than summer. When, following this discovery, the same precautions were taken winter and summer, the repairs were found to assume their normal condition of greater in winter than summer. Desiring to ascertain definitely the conditions as they existed on Canadian lines, Canadian Railway and Marine World sent letters outlining the above observations to mechanical operators of the principal Canadian lines, from whom the answers quoted below have been received.

W. H. Winterrowd, Mechanical Engineer, C.P.R.: "Our locomotive failures are somewhat higher in winter than they are in summer. We keep a record of our locomotive failures by means of graphics."

W. D. Robb, Superintendent of Motive Power, G.T.R.: "You do not state on what roads in the U.S. it is claimed that failures are more numerous in summer than in winter, but I think it must be a road that does not suffer such severe winter conditions or have as much snow as we do in Canada. With the power in practically the same condition, we have a greater number of failures in winter, and our records show an increase of fully 25 to 35%".

S. J. Hungerford, Superintendent of Rolling Stock, Canadian Northern Ry.: "I am inclined to think that there was some unusual condition on the U.S. railway referred to, to cause a decrease of locomotive failures in winter, as it is entirely opposed to general experience and physical conditions. The matter of locomotive failures, however, depends on a great many factors, and it is exceedingly difficult to reduce them to actual failures so that a fair comparison can be made. It is obvious, however, that the chance of fracture during severe weather is greater than in warmer weather, as the metal seems to be affected by the frost, and roadbeds become much more rigid, besides getting out of surface as a result of the frost heaving it in places where the drainage is not perfect. In addition to all this, trains that have been standing for any length of time offer greatly increased resistance, and as the additional resistance due to snow on the track is difficult to determine, it frequently happens that locomotives have to be worked proportionately harder in order to handle tonnage or make time, and this results in greater stresses in machinery, and the greater amount of water evaporated, together with the forcing of the fire, increases the risk of flue leakage. It is also practically impossible under certain weather conditions for employes to examine their locomotives as carefully, or to perform their duties as efficiently, while the usual irregularity of trains in very severe weather also acts as a handicap on locomotive house forces in looking after equipment properly. Taking it altogether, it is my opinion that there is at least twice the chance of failure in winter that there is in summer, in this particular territory at least, and our statistics seem to show this."

G. R. Joughins, Superintendent of Motive Power, Intercolonial Railway: "We, in common with most railways in Canada, find that the failures are greater in winter, but regret that we have no figures that we could give."

Concrete Water Barrels for Railway Bridges.

Concrete water barrels for railway bridges are described by H. McDonald, Chief Engineer, Nashville, Chattanooga & St. Louis Rd., in the 1912 Proceedings of the Engineering Society of the South. One design is 30 in. deep, 24 in. outside diameter at the top, tapering to 22 in. at the bottom. The sides and bottom are 2 in. thick, reinforced with a sheet of expanded metal. The cover is of iron, hinged to a lug embedded in the concrete, and is depressed so as to catch rainwater. They do not leak, the evaporation is slight, and the concrete will resist bullets (which are apt to be fired at the barrels by boys and others). The total cost is about $1.70, divided as follows:

Cover: Galvanized iron, 5 sq. ft. at [illegible]	[illegible]	
Hinge, bolts, rivets and wire	0.05	
Cost of making, 1 man 1 hour	[illegible]	[illegible]
Barrel: 17 sq. ft. exp. metal at 3c	[illegible]	
0.1[illegible] cu. yd. 1:2:4 concrete	0.24	
Forms (25 barrels to one set)	[illegible]	
Labor	[illegible]	1.15
Engineering and contingencies, 10%		0.15
Total		$1.7[illegible]

Other experiments have been made, using a less tapered form of barrel, galvanized iron forms, and poultry netting reinforcements. Plastering the mortar on the reinforcement has not resulted in tight barrels, but 1:2:4 concrete cast and jammed into forms has given good results. It is believed that good concrete water barrels, with metal tops, can be made for $1.30 each, in large quantities. Another design consists of a concrete box let into the ground all but about 1 ft., this upper part being marked with the number of the trestle.

The wooden barrel is the more expensive of the two, considering its capitalized cost, on the basis of six years life, leaving out all consideration of increased cost of maintenance. The ballasted deck trestle is rapidly becoming the standard on most roads, and it is thought that in the future the water barrel will seldom be needed. For this reason concrete barrels are not used to any extent on the N., C. & St. L.R.

Chilled Iron Car Wheels.—In a paper read before the New England Railroad Club recently A. A. Hale stated that, in the development of the freight car from 20,000 to 100,000 lbs. capacity, all parts of the car have been increased in weight, but no part has shown such slight increase as the chilled iron wheel. Car capacity has increased 400%, the weight of axle 149%, the weight of rail 100%, whereas the weight of the wheel has increased only 38%. In the opinion of the author, chilled-iron is the only metal of which wheels are manufactured which will stand up under extremely heavy loads without crushing or flowing.

The Montreal Warehousing Co. expects to have its 1,000,000 bush. extension to its grain elevator B, complete and ready for operation by Nov. 15.

National Transcontinental Railway Power House at Transcona.

The N.T.R. Commission, in building the large general locomotive and car repair shops at Transcona, Man., decided that the best interests of the railway, in economy, efficiency and reliability, could be served by the erection of a modern central power plant in which all steam and electrical apparatus of sufficient capacity to supply the present demands should be located. The power house is therefore one of the group of buildings described in general in Canadian Railway and Marine World for Feb., 1912. The power house is equipped throughout with the best apparatus that money could purchase, and with the care shown in the design and selection of equipment the plant is at least the equal of any in Canada, as well as being one of the largest railway repair shop power plants on the continent.

All the main buildings comprising the shops face on a central midway, which is 1,200 ft. long, and extends through the shop grounds from the locomotive house to the public highway. The buildings in which locomotive repairs are made are those at the south end of the midway and adjacent to the locomotive house, whereas the car repair buildings are on the north end of the midway and alongside the street leading to Winnipeg. The power house occupies a central position between these two groups and is on the west side of the midway. This central location is excellent for an efficient and economical distribution of steam, air, water, and electric power to the various buildings for all purposes. The necessity of possible future extension has been anticipated, and in consequence this building, in common with the others of the repair plant, may be largely extended with a minimum expense.

The power house is of very similar construction and appearance to that of all the other buildings of the plant, being concrete below window sills and local white brick above, while the roof trusses, crane tracks and coal handling and storage plants are supported on steel columns. The outside dimensions of the structure is 110 by 155 ft. with the narrow frontage on the midway, and is divided by a brick fire wall into a 59 by 150 ft. engine room and a 45 by 150 ft. boiler room, the latter being on the south side of the building. The pump pit is a part of the engine room and is 16 ft. wide by 8 ft. deep, extending along the fire brick wall the entire length of the building.

The general arrangement and construction of the 59 by 150 ft. engine room is shown in one of the accompanying illustrations. It will be observed that the roof is carried on nine trusses, supported on steel columns from the side and fire walls. The design is such that with the central skylights in the roof, and large windows around three sides of the room, almost perfect natural illumination is obtained. The walls, ceiling and steel work are painted white, which aids in the illumination of the room. Ventilation is obtained through all windows and skylight ventilators. The roof is spanned by a 10 ton hand operated travelling crane, capable of handling any of the heavier parts of the engine room equipment.

The pump pit and boiler room floors are of [illegible]

[illegible] necessary to carry the foundations for all [illegible]

[illegible] and most of the steam, air and water piping are concentrated in the pump pit mentioned previously, this leaving that portion of the power house above the floor practically clear.

The boiler room contains the entire steam generating equipment for power and heating of the locomotive and car shops, access between this and the engine room being only through fire doors. In this room are also located the coal storage bins and coal ash handling apparatus. A special track for coal supply cars runs along the south side of the power house. The 200 by 11 ft. reinforced concrete chimney is entirely independent of the building and a few feet west of it.

The generating apparatus in the engine room consists of 9 units with a total normal capacity of 2,030 k.w. divided as follows:—1,600 k.w. alternating current and 430 k.w. direct current. The generators were manufactured and installed by the Canadian General Electric Co., and the Goldie & McCulloch Co. supplied and installed all engines.

View of Engine Room, from South West Corner

The standards adopted by the N.T.R. Mechanical Engineer for the various types of apparatus and supplies are as follows:

[illegible]

Hydraulic pressure (for tools)..1,500 " " " "

[illegible]

In order to designate the various piping systems the following standard colors have been used:—

[illegible]

The units supplying the electrical power are provided as follows:— Three 500 k.w., a.c. 600 volt 60 cycle 150 r.p.m. generators each direct connected to a horizontal 21 by 30, 34 by 30 in. cross compound noncondensing Corliss steam engine. One 250 k.w., a.c. 600 volt 60 cycle 150 r.p.m. generator direct connected to a horizontal 18 by 30 in. simple Corliss steam engine. One 150 k.w., d.c. compound wound 250 volt 150 r.p.m., generator direct connected to 14 by 30 in. horizontal simple Corliss steam engine. Two k.w., d.c. compound wound 125 volt 275 r.p.m. exciter generators direct connected to horizontal 11 by 12 in. high speed simple engines. One auxiliary 150 k.w. motor generator set consisting of a 225 h.p. 900 r.p.m. induction motor direct connected to a 150 k.w. d.c. 250 volt compound wound interpole generator. All apparatus is noncondensing, on account of all the exhaust steam from the engine, compressor, and other auxiliary devices being required in the low pressure steam system of the shops.

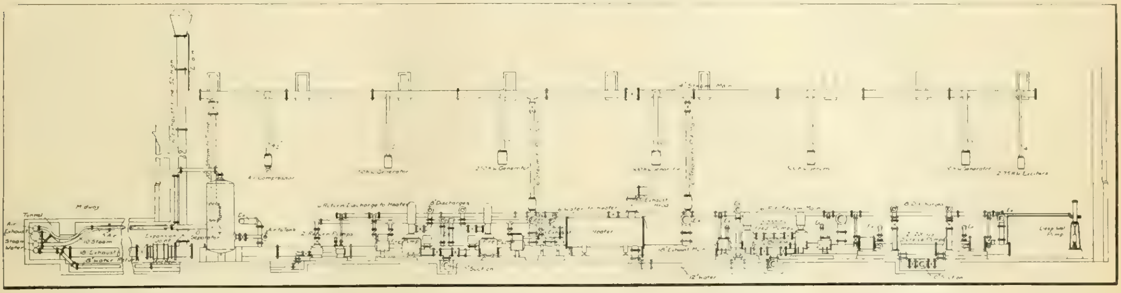
The switchboard controlling these generators was manufactured and installed by the Canadian Westinghouse Co., and consists of 21 blue Vermont marble panels 7 ft. 8 ins. high, and 2 ins. thick, the entire board being 52 ft. long. There are 7 generator panels, 1 a.c. totality panel, 1 d.c. feeder, 1 a.c. general lighting, 1 arc lighting, and 10 a.c. feeder panels, the only special apparatus on the switchboard being the motor operated rheostats with which each of the generator panels is supplied. As all the power and light distribution is underground the necessary cables pass through 38 ducts in the east and west walls to the various buildings. The conductors between all generators and switchboards are rubber insulated, lead covered cables, run in iron conduit from the oil switches to generator terminals; all feeder circuits to the various buildings are paper insulated and lead covered, run in fibre or tile conduit.

There is at present 2,560 k.w. in motor and lighting load connected to this power plant, and this amount will be increased to approximately 4,060 k.w. when the car shops are fully equipped. The low load factor common in this type of shops, still gives the power plant a reasonable margin for emergencies.

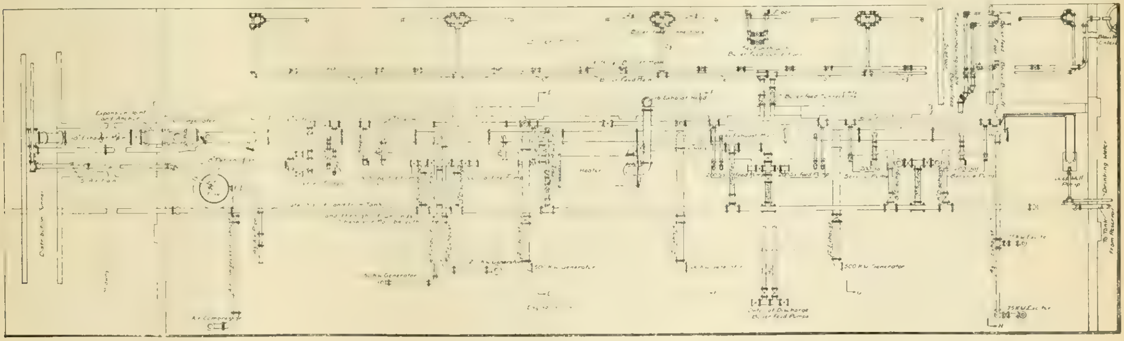
The artificial lighting of both the engine and boiler rooms is performed by Cooper Hewitt type H mercury vapor lamps for general illumination, and incandescent lamps in the pump pit, pipe tunnel, and in the boiler room basement. Extension cord receptacles are also located at various places in the building.

All the large steam driven units are lubricated by a gravity pressure system, and all waste oil flows by gravity to a filter located in the pump pit from which it is again pumped to the overhead supply reservoir.

The pit arrangement is probably the most interesting of the power house details, and is shown completely in the accompanying illustrations. The several boilers all have 8 in. U bend steam connections from the top, connecting through openings in the fire wall with a 14 in. steam main along the fire wall over the pit. From this main, the several connections to the different power units lead off, all protected with magnesia coverings, which in addition to introducing an economy, add an attractive appearance to the piping. At the engine end of each of the connections, there is a separator. Near the centre of the room are two 6 in. steam legs with separators at the lower end, connecting with a 6 in. steam main just below the floor level, this main running the full length of the pit, supplying all the auxiliary equipment there located. At the east end of the upper main, there is a 10 in. steam leg with separator, connecting with a 10 in. main that runs through the tunnel down the midway, supplying steam for shop use, but principally for the steam hammers in the blacksmith shop.


Cross Section through Pit, looking towards Fire Wall.

In addition to the electric generating apparatus in the engine room, there is a horizontal cross compound, Corliss, two stage air compressor having a capacity of 1,500 cu. ft. of free air per minute, at 80 to 100 lbs. per sq. in. pressure. The steam cylinders of the compressor are 16 and 25 ins. diameter, and the air cylinders, 24 and 14 ins., the stroke being 36 ins. Both air cylinders are fitted with Corliss inlet and poppet outlet valves. The speed is regulated by a combination speed and pressure governor, the normal speed being 90 r.p.m. Both air cylinders, heads and intercooler, are water cooled.


Plan of Piping Arrangement in Engine and Boiler Rooms.

The exhausts from the different engines, all lead out from under the engines in shallow trenches under their respective engines, connecting with an 18 in. exhaust main at the bottom of the pit along the fire wall. All the buildings of the plant are heated by exhaust steam on the indirect fan system, as explained and described in the previously mentioned article. This main leads out through the front of the building into the distribution tunnel to all the buildings. At the front of the building, there is an oil separator to keep the heating system clean, and an anchor and expansion ring to take up all the linear expansion due to heat. Midway between the anchor and expansion joint, a vertical 16 in. pipe, 52 ft. high, leads up to an exhaust head on the roof of the building for atmospheric exhaust. There is a back pressure valve in the vertical pipe, which controls the pressure in the heating systems, also the back pressure in the engines; when the heating system is not required, it can be shut off, valves being located in the main just beyond the exhaust head connection.

A feed water heater is located at a central point in the pit, one end connecting with the exhaust main, and the other leading on through an exhaust head similar to the one just mentioned. A valve is situated in the short connection from exhaust main to heater for cutting this out when necessary to clean the heater.

The water system is very complete. In order to obtain a soft water supply at the shop site, a pumping station was erected at the Red River. This station has suction pipes running out into deep water, connected to vertical triplex high speed pumps having a 24 hour capacity of 1,000,000 imp. gallons, direct connected through friction clutches with gas engines. There is a duplicate producer plant to ensure a continuity in the service. The water is conveyed the 6 miles to the shops through 6 in. wooden stave piping. At the shop site, some distance to the rear of the power house, the water is emptied into one end of a storage settling basin of a storage capacity of 2,000,000 imp. gallons. This reservoir is constructed of concrete, and is 60 by 270 ft., and 25 ft. deep, the top being slightly above the level of the ground. The reservoir is divided lengthwise by a reinforced concrete wall, the balance being of mass concrete. The dividing wall makes possible the use of one half of the reservoir for storage, while the other half is being cleaned, and vice versa, as the water from the river is full of sediment, requiring constant cleaning. The reservoir is roofed over with double planking supported on steel beams. Close up under the roof are hung a number of heating pipes, to prevent the water from freezing too thickly on top and interfering with the outlet pipes. The water is drawn off from the end opposite that for the entry, giving the sediment a good opportunity to settle.

From this reservoir, the water is drawn off through a 10 in. pipe, coming into the power house in a trench in the bottom of the pit along the engine room side of the auxiliary machinery pit. This main leads along the side of the pit through nearly its full length. Near the rear of the pit are two 1,200 gallon centrifugal service pumps, driven directly by two 70 h.p. Kerr turbines, drawing their water from a 10 in. suction pipe from the reservoir water main, and each delivering through an 8 in. discharge pipe into a 10 in. water main near the top of the pit on a level with the engine room floor, on the same wall of the pit as the reservoir water main. This upper water main connects at the rear, or west end, of the building with a 100,000 imp. gallon steel

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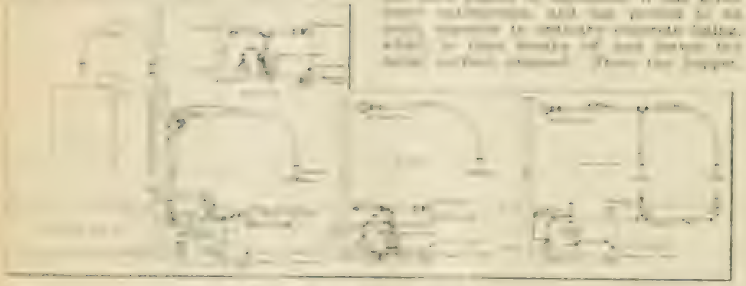

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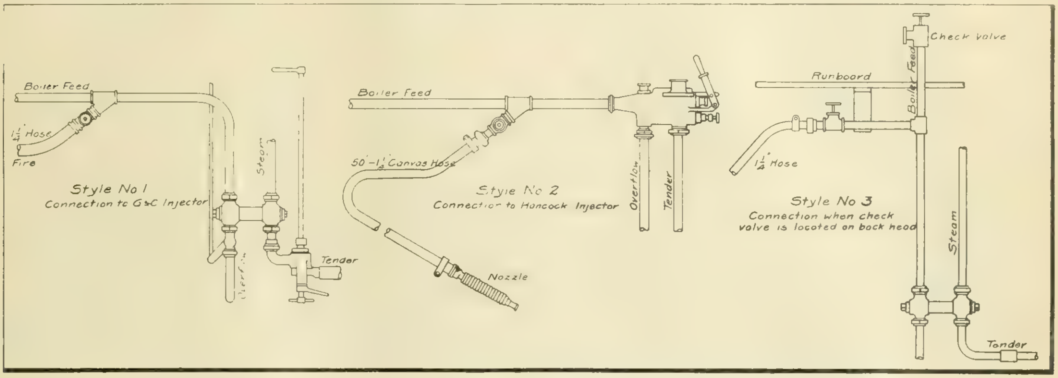
Halifax Ocean Terminals, Intercolonial Railway.

[illegible]

Locomotives Equipped for Fire Fighting on the Canadian Pacific Railway.

Mention has been made in the technical press that certain U. S. railways have equipped some of their locomotives with fire fighting apparatus, to act as auxiliaries to the local municipally owned apparatus at the several stations where these equipped locomotives are to be located.



Equipment of C.P.R. Locomotives for Fire Fighting, showing Water Connections from Boiler Feed Pipe.

For some time past, the C. P. R. has been equipping all its switching locomotives with fire fighting apparatus, and in addition to this being ordered on all new switching equipment, orders have been issued to add it to all of that class as they come in for shopping. At the end of last year, there were on all parts of the system, 162 locomotives so equipped.

The equipment is standard, apart from the method of installation on old and new locomotives. There are three different styles shown in the accompanying illustration. Style 1 is for use with the old G. & C. injector. The only change in the existing arrangement to introduce the fire apparatus, is to place a Y connection in the boiler feed pipe, with a valve connection in one of the legs for the hose connection. In style 2, the arrangement is the same except that it is for the Hancock injector. Style 3 is similar in most particulars to style 1, except that the boiler check valve is in the back head of the boiler, a practice followed with some small saddle back switching locomotives, necessitating a pipe branching off from the feed pipe and running forward under the runboard. Each side of all the locomotives is similarly equipped, so as to make the auxiliary injector of service.

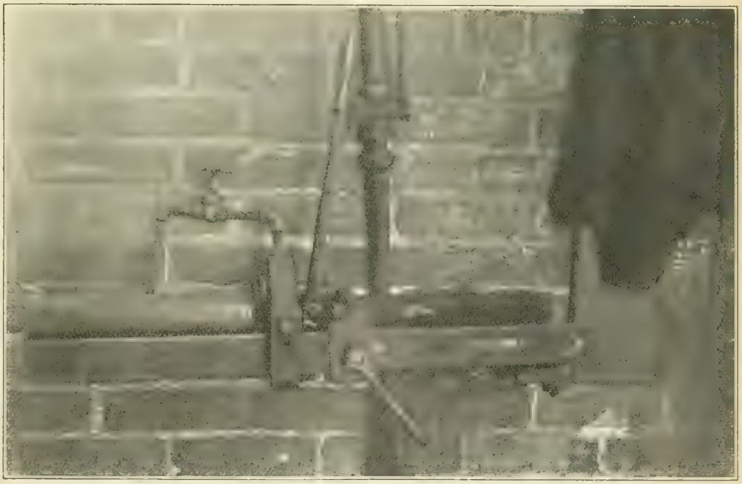
Each locomotive is equipped with 50 ft. of 1 1-4 in. canvas hose for attachment to the Y connection. This is provided with a 5-8 in. nozzle. With the pressure of the water, as forced out by the injector, a stream can be thrown for a considerable distance, with the stream of such volume as to be of considerable assistance in checking a fire in the early stages.. Each locomotive is also equipped with a nipple threaded to fit the local hydrant of the place where the locomotive is stationed, so that the hose may be used on the local service when the water in the tender has been exhausted, or when it is otherwise deemed expedient to do so

The 162 locomotives equipped are well distributed over the system, as shown by the following list of locomotive locations. Eastern Lines: Glen Yard, 3; Sortin, 4; Toronto, 8; Windsor, 1; North Bay, 1; Sherbrooke, 1; McAdam Jct., 1; Hochelaga, 10; Angus Shops, 1; London, 3; Prescott, 1; Quebec, 1; Brownville Jct., 1; Bay Shore (St. John), 3; Outremont, 9; West Toronto, 12; Havelock, 1; Carleton Place, 1; Three Rivers, 1; and Farnham, 3. Western Lines: Winnipeg, 22; Calgary, 6; Kenora, 3; Medicine Hat, 2; Red Deer, 1; Sutherland, 2; Strathcona, 1; McLeod, 1; Weyburn, 1; Fort William, 12; East Calgary, 5; Lethbridge, 2; Eholt, 1; Swift Current, 1; Portage la Prairie, 1; Wilkie, 1; Souris, 2; Smith's Jct., 1; Brandon, 5; Moose Jaw, 8; Vancouver, 9; Revelstoke, 1; Minnedosa, 1; Kamloops, 1; Ignace, 1; Regina, 3; and Cranbrook, 3.

Tube Testing Head at Toronto, Hamilton and Buffalo Railway Shops.

An arrangement is in use in the T. H. & B. R. shops, Hamilton, W. T. Kuhn, Master Mechanic, for expediting the work of testing safe ended tubes. These are all subjected to a hydrostatic presure, most shops having special provision for so doing.

The test stand consists of a length of shallow channel, with water headers at each end between which the tube is placed, and the pressure applied. In this particular, most testing machines are the same. The adjustable head of this stand is out of the ordinary, and is shown in the accompanying illustration. For the accommodation of different lengths of tube, and for introducing tubes of the same length, adjustment is required. For varying lengths of tubes, there is a cross brace in the channel, secured where desired by a clamping screw on the side of the channel as indicated. The water head is loose, and may be moved within a short limit without stop adjustment.



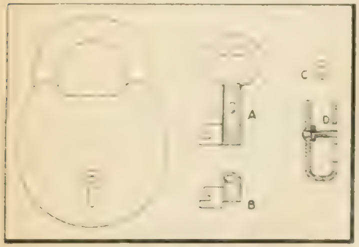
Quick Operating Tube Testing Head.

Pivotted to the face of the stop is a lever, the lower end of which is cam shaped. In the vertical position, the tube can be introduced. By bearing down on the lever, the packed water head can be forced against the end of the tube, forming a tight, packed connection. This connection can be quickly made, and as quickly removed, facilitating the work of testing.

A paper on the railway hotel and its function, by F. W. Bergman, Manager Grand Trunk Pacific Ry. Hotels, was read before the Western Canada Railway Club in Winnipeg, Sept. 8.

An Improved Padlock.

In a large Canadian railway repair shop in Montreal nearly all of the employes have a padlock of their own for various purposes and reasons sufficiently good to themselves. Some are direct and some indirect, and many kinds are used, especially on tool boxes. In spite of their variety, however, some of the employes on the night shift delve deeper than the lock maker, and supply themselves with keys of a dozen different kinds of design, and seem to have no great difficulty in making a private inspection of the interior of the tool boxes. In order to put a stop to these questionable transactions, we cut a small piece off the key ,as shown in the accompanying illustration at B, and made from steel wire an open ring, C. and placed the ring inside of the lock on the key guide pin at D. The lock may be readily opened by the owner of the key from which the small piece has been cut, but when the midnight prowlers come along with their false set of keys, they find that their right hands have lost their cunning, and, as they say, they are up against it, and they are compelled to turn their mechanical ingenuity to some other more honorable occupation.—J. G. Koppel, in Railway and Locomotive Engineering.



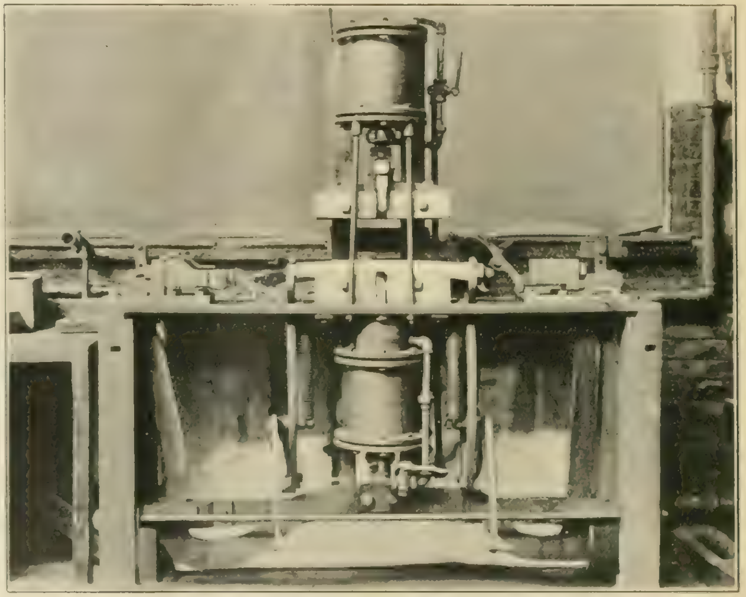
Safety Padlock

Air Hose Machine in Grand Trunk Railway Port Huron Shops.

Practically all the different types of hose repairing machines in use on the various Canadian lines have been described in Canadian Railway and Marine World. Each shop seems to have developed a machine which seems to meet its own particular requirements. In the shops at Port Huron, Mich., the machine shown in the accompanying illustration is in use, a design that was evolved and constructed there.

Mounted on legs above the table is an air cylinder, and in line with it is a similar cylinder supported from the under side of the bench. On the bench is a half die section, grooved to hold the hose, and with a corresponding section attached to the lower end of the upper cylinder plunger rod. The lowering of the latter secures the hose during the forcing in of the fittings. The latter are held in guided blocks just beyond the ends of the hose. These guided blocks are moved along their ways by bell cranks, pivotted on a frame of bar iron under [illegible] to the lower cylinder plunger rod, the de- [illegible] blocks towards each other, forcing the fittings into the hose ends, the latter being [illegible] front of the cylinder, so located that the [illegible] The downward force of the lower cylinder, if the hose fittings are rather tight, is so great that in service, one of the bell cranks failed. In the present construction, this weakness has been remedied by a cross brace between the vertical and horizontal arms of the bell cranks.

The clamping rings over the hose ends, binding the latter to the inner end of the fittings, are tightened up into such a position that the clamping bolts can be inserted by means of the foot levers near the bottom of the view, outside of the coiled springs below the bench. Pivotted at the bench level at each end of the hose, is a pair of long pincers, the upper ends of which come up over the top of the hose clamp, tapering down to a thin edge at the point where they engage the clamp. The lower ends of each pair of pincers are connected through two short joined links, inclined upwards to the juncture. The connecting pin at this juncture is attached to the foot lever, the inner end of which is pivotted at the wall, so that the depression of the treadle forces apart the lower ends of the pincers, the upper ends closing over the clamp ring, when the bolt can be inserted and tightened. To tighten effectively, each end is operated on separately, the operator standing on the end of the treadle of the end being clamped.



Air Hose Machine for Inserting and Removing Fittings.

The machine can also be used for pulling out the fittings from old hose, by fitting into the guided blocks the hooks shown on the bench in the right background. The guided blocks are first brought to their inner position, the hook clamps inserted in the block and attached to the fittings at each end, and by a reversal of the motion in the lower cylinder, the fittings are withdrawn.

Defective roadway and defective equipment jointly caused more than 70% of all the derailments on steam railways in the United States during the quarter ended March 31, according to statistics recently published by the Interstate Commerce Com- [illegible]

Construction Railway and Grand Trunk Railway Deviation on New Welland Ship Canal.

In connection with the building of the new Welland Ship Canal, described in the Marine Department of Canadian Railway and Marine World for July, there is to be built a section of double track industrial railway for the use of the contractors, and in addition, a section of the G. T. R. Welland branch is to be diverted to make room for the new canal, which follows the course of the old railway line through this section of the canal.

It is proposed to build this construction railway double track and standard gauge, along the west bank of the canal, extending from the shore line of Lake Ontario to the stock piles of rock on section 3 of the work north of the G. T. R. main line, near the site of the tier of three double locks, a distance of about 6 miles. This line is to be built by the Department of Railways and Canals in a semi permanent manner, with at least 56 lb. rails, on good ties at 2 ft. centres, and ballasted with broken stone or gravel.

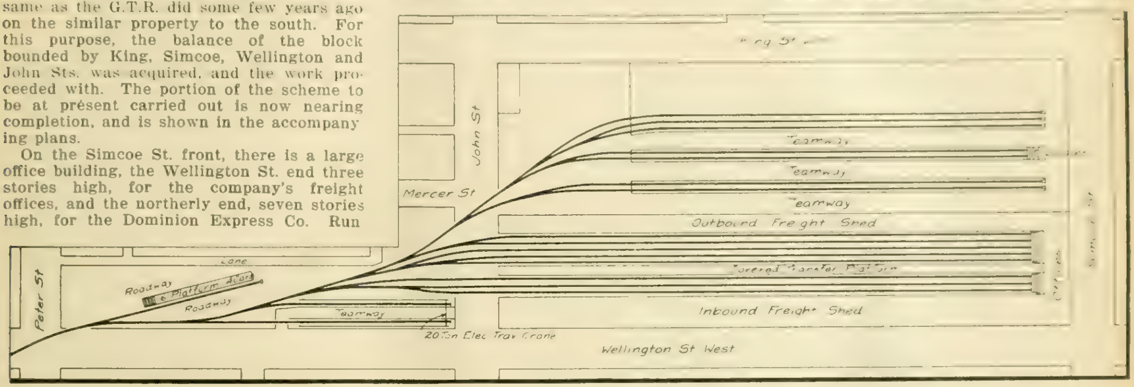
The general contractors for sections 1, 2 and 3 of the canal, which include all the locks and the terminal piers at the Lake Ontario end, will be allowed the free use of the railway for hauling the excavated material to the dump in the lake, and the contractors for sections 1 and 2 will also be allowed its use for the hauling of stone from the stock piles to the various works. Contractors for the steel and other work will also be allowed the free use of the line. A dispatching station will be maintained, with a dispatcher, who, with switchmen, will have complete control of train movements over the railway. Contractors may make connections to the line, under approval. Before using the line, the contractors will be required to sign an agreement relieving the Department of all responsibility in connection with accidents or breakages on the line.

The section of the G.T.R. Welland Branch to be diverted is about a mile which closely follows the present canal just south of where the Welland Branch leaves the main line. The diversion will leave the main line at the same point, but instead of immediately crossing the canal, will follow the west bank, making a sweep to the west and crossing the canal at right angles about a mile south of the present crossing of the existing canal.

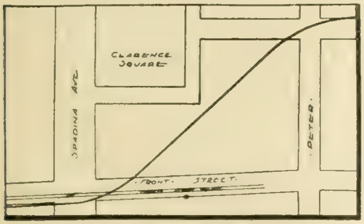
New Toronto Freight Terminals for Canadian Pacific Railway.

About two years ago, the C.P.R. acquired the old Government House property, corner of King and Simcoe Sts., Toronto, on which to erect new package freight terminals, the same as the G.T.R. did some few years ago on the similar property to the south. For this purpose, the balance of the block bounded by King, Simcoe, Wellington and John Sts. was acquired, and the work proceeded with. The portion of the scheme to be at present carried out is now nearing completion, and is shown in the accompanying plans.

On the Simcoe St. front, there is a large office building, the Wellington St. end three stories high, for the company's freight offices, and the northerly end, seven stories high, for the Dominion Express Co. Running back from the office buildings, there are two 900 ft. freight sheds, one for incoming and the other for outgoing freight. Between the two are 8 tracks. There is a covered transfer platform running along between the buildings, also 900 ft. long. To the north of the buildings there are three teamways, with 7 team tracks. The frontage on King St. to the north is to be utilized for future office and freight shed extensions.



Plan of New Canadian Pacific Railway Freight Terminals at Toronto.



Approach to New C.P.R. Freight Terminals.

To the west of John St., additional property was acquired for heavy team tracks. The approach to the yards is through this section of the property. The approach tracks leave the main line at Bathurst St., ascending the escarpment along Front St., reaching the upper level at Spadina Ave., as shown in the smaller illustration. From that point, the line cuts across blocks on its own right of way to the new terminal property.

R. Mee, who took the first C.P.R. passenger train to Port Moody, then the Pacific terminus, died at Vancouver, B.C., Aug. 27.

Proposed Reduction in the Height of Box Cars.

The subject of the reduction [illegible] of freight cars has come up before the Board of Railway Commissioners [illegible] recent occasions. The bulk of the evidence taken indicates that the C.P.R. is the only line operating in Canada that strongly favors the proposed reduction, the principal consideration advanced being that it would facilitate the matter of grade separation. At the first hearing, in Ottawa, June 17, there were representatives of the C.P.R., G.T.R., Canadian Northern Ry., Michigan Central Rd., Wabash Rd., New York Central Lines, Pere Marquette Rd., Toronto Board of Trade, and the Canadian Manufacturers Association, all of whom took part in the discussion. The section discussed was a "consideration of the proposal that by limiting the height of freight cars to 13½ ft. from the top of the rail to the running board, trainmen would be safeguarded and grade separations facilitated; also of proposals submitted by the Canadian Freight Association in conformity with the suggestion that this object would be promoted by basing the minimum weights of the Canadian Freight Classification for light and bulk articles on the cubical capacity of box cars instead of their length as at present." J. W. Leonard, Assistant to Vice President, C.P.R., pointed out that an inside height of 8 ft., plus the 7 ft. clearance over the running board as called for by the Railway Act, would give a clearance of 20½ ft. This difference between 20½ and 22½ ft., the clearance demanded by the Railway Act, would in many instances enable a separation of grades, where the increased cost due to the excess of 2 ft. clearance would make grade separation out of the question. The late Chief Commissioner, J. P. Mabee, is claimed to have stated that there were dozens of cases in the last few years that would have been got rid of but for this consideration. Mr. Leonard further stated that there was a probability that both the C.P.R. and G.T.R. might get together and agree not to build any more cars greater than this height, as recommended by the American Railway Association in 1901, and ordered as standard by the Master Car Builders' Association.

D. Crombie, then General Superintendent of Transportation, G.T.R., stated that as 61% of their traffic in 1910 was international, it might affect that portion of their business if the height of cars were restricted in Canada and not in the U.S. This was an important factor, as it was stated by S. W. Brown, General Superintendent, M.C.R., that there are on this continent 58,000 box cars in excess of the proposed height standard, and Automobile cars appear to be the worst offenders.

The discussion was [illegible] the feasibility of having international shippers advised of the ruling in Canada, and sending their goods in cars that would meet Canadian requirements. Mr. Leonard [illegible] to think this practicable, but the majority of the railway representatives were opposed to this, claiming it would work a discrimination in favor of through U.S. lines which had no such limitations.

Chief Commissioner Drayton then stated that he thought a ruling or order ought to be made that no box cars be built in Canada by railways under the Board's jurisdiction to exceed 13½ ft. high, and that these cars only should be used for shipments between points in Canada. Also, that no cars in excess of 13½ ft. should be loaded in Canada for delivery in the U.S., and that no cars on the U.S. lines of the companies under the Board's jurisdiction should be loaded for delivery in Canada. No action towards enforcing this ruling has been made, nor has an order covering it been issued.

At the second hearing, in Toronto, July 15, in addition to representatives from the the previous hearing, there were representatives of the Canadian Freight Association and of individual manufacturers who would be affected by the passage of the proposed order. The Ford Motor Co. raised the principal manufacturers' objection to the proposed standard, claiming that with the high cars, by loading their motors on end, it was possible to load 7 to a car, whereas with the lower car proposed, it would only be possible to load 3, and the suggested measure of making the cubical contents of a car the basis of minimum weights would not overcome this difficulty, as the increased length of car that this might introduce would not increase the loading capacity as far as this product was concerned. The Canada Ingot Iron Culvert Co. raised objection on the ground that as its product was light and bulky, it was necessary to pile flat cars higher than the proposed height restriction in order to secure anything like the minimum loading. The Chairman of the Furniture Section of the Canadian Manufacturers Association raised the point that U.S. manufacturers would have the advantage over Canadian manufacturers, as the former would be able to use the higher cars for shipping in their product, working a discrimination against the Canadian manufacturer, but this objection was met by the Chief Commissioner stating that the proposed order [illegible] everything except the through movement of high cars. The substitution of the cubical content basis for minimums instead of the car length basis as at present would, in the opinion of those present, eliminate any hardship resulting from the lower car as far as the furniture manufacturers were concerned.

The principal difficulty in connection with an order that presented itself to the Chief Commissioner was the fact that at certain times of the year, principally when the grain was moving, there are so many cars travelling east on lines which carried chiefly a through business, that a large percentage have to return west light for want of loads. On returning west through Canada, they pick up what loads are available, relieving Canadian traffic conditions to that extent. In the event of an order, these lines would be prevented from carrying on this pick up business in Canada with the high cars, which might be a serious matter.

T. Marshall, Traffic Department, Toronto Board of Trade, pointed out that as there are on the average some 30,000 Canadian cars always in the U.S., the exclusion of foreign cars over the height limitation would tend to create a car shortage, for, while it was possible for U.S. shippers to eventually become advised of the car limitations in Canada, for some time it would be necessary to exchange loads at the frontier, leaving fewer Canadian cars open for engagement.

In reply to a query as to whether some revision in minimum weights would be made in the event of an order restricting the height of box cars, the Chief Commissioner stated that such a revision would be made regardless of this proposed order, for to leave the matter as at present is simply for the purpose of competition, to enable one traffic officer to get advantage of the other.

Mr. Leonard suggested that the width of box cars should be considered as well as height, as the widening of cars would necessitate the moving back of objects on the right of way, as required by an order made by the Board some years ago, in conformity with the then accepted standard.

The consideration of the matter of substituting cubical, for the length of car basis, as the minimum for light and bulky articles came up for brief discussion at this meeting, but as the railways did not seem anxious to consider the matter at that time, the consideration of this, as well as a further discussion on the reduction in the height of box cars was deferred to an unstated date.

Railway Efficiency.

By A. Crumpton, Assistant Engineer, Grand Trunk Railway, Montreal.

The product of a railway is transportation, and the measure of its efficiency is the quality and cost of producing the same. In transportation upon land the railway has proven itself pre-eminently superior to any other way. It is a far cry from a rate of $1 a ton per mile for "packing" upon men's backs, or even 25c. a ton mile by team, to ¾c. a ton mile, which is the average cost to the public by railways in America. Passengers in America pay an average charge of a little less than 2c. a mile, and a trip of 500 miles in 12 hours is common. Only the man on the inside realizes what this means, both as regards perfection and economy of construction and operation. In Europe the average freight charge per ton mile is 1½c.—double what it is in America —while passenger rates run from 1½c. to 2c. for third class to 3c to 4c. for first class accommodation. This is only of interest as showing where we stand, but does not prove anything as regards relative efficiency, the conditions of construction and operation being different on the two continents. In 1870, the average freight rate per ton mile was 2c. as against ¾c. in 1909, a reduction in 40 years of 62%.

W. M. Acworth, an international authority on railway economics, who from time to time inspects American railways in the interests of English investors, says: "It has been my opinion that in actual economy of operation the railways of the United States are first in the world."

A railway to continue and increase its efficiency must not only keep up its lines and equipment for current traffic, but must have means in advance to provide for increasing requirements. This country is rapidly growing in population and wealth, and there is an insistent demand for a better and more improved passenger service, faster freight service, and greater safety. Since these things, speaking generally, do not increase revenue they are a proper charge against operating expenses, and should be met by increased rates for transportation, where necessary. The peculiar fact is that while the public appreciates the situation in ordinary matters and expects to pay more for better pavements or better clothes, yet, in matters of transportation it demands better service and refuses to pay more for it. When, in 1910, a large section of the railways of the United States made application to the Interstate Commerce Commission for authority to increase rates, they were met by statements alleging lack of scientific management—that a million dollars a day could be saved by increased efficiency—and their request was refused. Detailed records of cost of building and maintaining railways and of conducting transportation have now to be kept by the railways, at the instance of the Commission, and the appraisal of all the railways in the United States has just been ordered, so that, no doubt, any future question of rates will be dealt with in the light of the efficiency shown by the railways. Briefly, it is claimed that the railways fail in efficiency as follows:

MAINTAINANCE OF EQUIPMENT, which consumes about 20% of the total operating expenses. "Railway repair shops throughout the country do not show 50% efficiency on an average as regards either materials or labor."—Emerson.

MAINTENANCE OF WAY, consuming about 20% of total operating expenses. "Standards of maintenance of way vary, but innumerable assays of actual work show a maintenance-of-way labor efficiency of scarcely more than 30%."—Emerson.

TRANSPORTATION, consuming about 50% of total operating expenses. "Fuel.— On the Santa Fe average fuel used per 1,000 freight train ton miles was reduced from 261 to 239 lbs. On the Chicago, Milwaukee & St. Paul 175 lbs. Dynamometer car 30 lbs."—Emerson.

"It has been demonstrated that by proper instruction, fuel consumption could be reduced at least one-half."—Brandeis.

Terminal expense, particularly the handling of less than car load lots, should be improved by the use of mechanical conveyors.

From the railway standpoint it may be said:

MAINTENANCE OF EQUIPMENT.—A fair comparison cannot be made between industrial shops, with uniform output, and railway repair shops with little uniform work, particularly as such repair work is incidental to the main purpose of producing transportation, and while low cost is desired, expedition is primarily which is required.

MAINTENANCE OF WAY.—The fact that maintenance of way forces may be scattered over thousands of miles of line makes adequate supervision difficult, and that the labor requirements vary with the season makes it impossible to always have the force as efficient as could be desired. The force required to man a thousand miles of line could be concentrated on one acre in a textile mill, so that comparisons of efficiency made under such conditions would be unsatisfactory.

TRANSPORTATION forces are strongly organized and militant, largely increasing the difficulty of reducing labor charges, but by betterment of roadway and the use of heavier power the railways are effecting such economies as are possible. In this connection Mr. Emerson said: "The efficiency of the traffic by my standards is very high; that is, the efficiency of expense in the traffic departments."

As regards economy in fuel and in its use, this has ever been a subject of investigation on the part of the railways, as also that of mechanical conveyance.

It may also be said that railway development has been proceeding along logical lines. First, the period of railway building, then one of traffic organization and consolidation, followed by one of betterments, embracing perfecting of machinery, strengthening roadbed and bridges, cutting down grades and increasing the motive power and weight of trains. And now the human factor is coming in for increased attention and systems of organization are being studied to the end that the machinery as a whole may be brought to the highest efficiency.

In this connection it will be interesting to examine the fundamental principles of scientific management as given by F. W. Taylor, its originator:

"1.—Each man in the establishment, high or low, should daily have a clearly defined task laid out before him. This task should not in the least degree be vague or indefinite, but should be circumscribed carefully and completely, and should not be easy to accomplish.

"2.—Each man's task should call for a full day's work, and, at the same time, the workman should be given such conditions and such appliances as will enable him to accomplish his task with certainty.

"3.—He should be sure of large pay when he accomplishes his task.

"4.—When he fails he should be sure that sooner or later he will be the loser by it.

"When an establishment has reached an advanced state of organization, in many cases a fifth element should be added, namely, the task should be made so difficult that it can only be accomplished by a first class man."

The railway as a proposition is characterized by its great extent, requiring unusual specialization in every branch, and this has in the earlier days led to undue centralization and the creation of departments whose heads endeavored to perform both "staff" and "line" duties. A departmental organization of this kind, projected over large areas with distant headquarters, has proved cumbersome in operation, a breeder of departmental jealousies, and unsatisfactory to both the public and employes. This type of organization is now being superseded by one in which the 'staff" and "line" functions are being separated. "Staff" functions, consisting largely of the theoretical side of the work, studying the underlying principles, whether physical or psychological, which make for efficiency in construction and operation; systematizing and standardizing every operation; providing instruction as to their application and formulating means by inspection and otherwise for unerringly recording both their performance and neglect, is necessarily the work of specialists.

Line functions, consisting of the more practical side of the active conducting and directing of the work, is none the less the work of specialists and experts, but of execution rather than design.

Line officers are in charge of stated districts, representing the railway in general and not any particular department. Under this arrangement the different departmental activities are co-ordinated and all the advantages of the public and employes being brought into close touch with a responsible representative of the railway gained.

In line with this, the accounting for each district is done on that district, to the end that greater accuracy may be attained by first hand knowledge and the officer in charge of the district be in possession of all the figures pertaining to the work for which he is responsible, thus enabling him to supervise more intelligently.

A further development follows—that is a common office and file. While merely a detail, this has proved of great value in reducing the volume of correspondence and locating upon one file everything that pertains to any given subject. The use of this system on the railways recently known as the Harriman Lines saved half a million letters a year.

Since material as well as labor enters into the work of a district, it is logical that this, both as regards purchase and supply, should be as far as possible in the hands of the local man, in order that he may be informed on every point. In the larger matters, blanket contracts would be let and districts would simply order under these, while in minor matters, standard prices would be fixed and where goods could be purchased locally and as cheaply, preference would be given to the district, thus decreasing handling and increasing the good will of the local public. The distribution of the prime functions of railway building and operation would be:

HEADQUARTERS.—Building of railway. Construction of equipment. Creating standards for conducting transportation. Maintenance of roadway, maintenance of equipment, as well as for the necessary instruction and inspection.

DISTRICT.—Conducting transportation. Maintenance of roadway. Maintenance of equipment. A superintendent, with a staff expert in the above mentioned lines, and first hand knowledge through his accountant of actual costs to compare with standard costs, both of labor and material, would at all times know the relative efficiency of his district. The strong feature of this type of organization is that with reasonable standards of work to be performed, everybody concerned from start to finish has something to measure his work by. A New York contractor, as an experiment, arranged for each man to have a bucket to shovel into. Result—almost at once the number of buckets that came out of the hole was doubled.

The creation of standard practice, both as regards methods and cost, is merely an elaboration and extension to every operation of practice now in vogue on all railways. For example: it is decided to bring a line up to a certain standard. Careful account is taken of what exists, then the method of producing the desired result is determined, written instructions are given and the cost calculated. Or a new train service is to be put on. Its requirements are determined, time tables prepared and its cost calculated.

Working to standards throws into prominence any overrunning of standard costs, and this acts automatically, and those in immediate charge of work look into the cause and remove it if possible, and if unavoidable keep proper records of its nature, for the creation of a new standard, if necessary.

INCREASING EFFICIENCY.—Efficiency experts have placed railway efficiency at 70% as against 60% in industrial concerns generally. While the total elimination of waste is impossible, certain classes of work have on many roads reached a much greater efficiency than the above average.

The first step should be to ascertain, tabulate and analyze present practice with particular reference to unit cost of performance. In most cases this could be done with little or no additional expense, simply the introduction of forms designed to this end in place of those now in use. The knowledge so obtained would be a basis from which to work, in fact, could be used as a standard of measurement pending the introduction of proper efficiency standards. Concurrently, present standard practice, as ascertained on one road, should be compared with standard practice on other roads or elsewhere, and when a superior method is found it should be adopted. Plans should be made, written instructions prepared of every step of the operation, not only what is to be done but how, and a standard of cost.

The following is an example from shop practice: Mr. Emerson went to the Santa Fe and found the annual cost of maintaining belting was 100% of its first cost. From previous experience he knew that this figure should be about 14%. Having this to work on, the best belting obtainable was purchased, 5% above the market price being paid for the privilege of rejecting unsatisfactory belting. A man was put in charge of the belting, with instructions that belts were to be kept in condition and replaced before and not after failure. Result—failures reduced from 300 a month to 50 and cost dropped from 100% to 14%. Incidentally machines were not delayed.

In the creation of standards, details down to the tool or machine to be used for a given service are specified. For example, in section work the relative economy of hand cars and motor cars is ascertained. Cars are then studied, improved and standardized, and under given conditions, which is to be used is specified.

The following are a number of instances of increased efficiency given before the Interstate Commission:

"1.—When applied to the simple operation of loading by hand a railway car with pig iron, the performance of the individual worker increased from 12½ to 47 tons a day.

"2.—When applied to shovelling coal, it doubled or trebled the performance of the shoveller.

"3.—When applied to machine work, it developed in certain operations, increases in production, ranging from 400 to 1,800%.

"4.—When applied to bricklaying, the day's accomplishment rose from 1,000 to 2,700 bricks.

It should be borne in mind that in dealing with this side of the question that a representative of railway labor appeared before the Interstate Commerce Commission and stated that the methods referred to could not and should not be introduced into railway work. In like manner the introduction of the Mallet compound locomotive was strongly resisted by the Brotherhood of Locomotive Engineers, and organized efforts were made by conductors and trainmen to have double heading prohibited. The fact is that labor organizations, as at present constituted, are by their very nature detrimental to efficiency. Employes in their respective classes are allied with like classes on other railways, for the furtherance of their particular class interest, and where [illegible] With the [illegible] the standard [illegible] with the union [illegible] The reasonable [illegible] between these extremes and [illegible] scientifically determined, both as regards performance and remuneration, and the present system of highly organized labor holding a pistol at the head of the railways, to the detriment of classes less highly organized, abolished. It would not be easy and would take much time, but it is conceivable that with a scientifically arranged and, therefore, equitable schedule of wages covering every branch of railway service, the settlement of schedules would become a matter peculiar to each railway and not determined by conditions on other railways having no bearing on the case. Such an arrangement would at least be an effort to give a "square deal" to all classes of employes.

As showing the way how not to create standards I quote the following from Scientific Management of Railways, by W. J. Cunningham. "The year 1910 saw the successful culmination of an ambitious plan to 'standardize' the wages of conductors, trainmen, and yardmen in the Eastern States; that is, to set a uniform rate per day, per hour, or per mile for each class of service, regardless of local conditions. The road with the highest wage scale (the Baltimore & Ohio) was selected as the battle ground, and the entire forces of the train service brotherhoods focused upon it in a demand for new and unreasonably high rates. To prevent a strike the railroad invoked the aid of the Board of Mediation under the Erdman Act, and the award, while not granting the rates demanded, carried with it substantial increases over rates already considerably higher than those of other roads in the East with distinctly different operating characteristics. The new basis was then in turn forced upon practically every road in eastern territory. The increases in New England averaged between 20 and 30%, and in some cases exceeded 50%. At the same time long standing differentials between different grades of employes were seriously disturbed. Throughout, the new wage basis and working rules (prescribed partly by Governmental mediation) are far from scientific or equitable."

Cost keeping must be systematized with the same care as other operations and be beyond criticism to be effective. The familiar description of the three grades of lies had its origin, no doubt, in poor cost keeping. There is a story told of a locomotive standing in a repair shop waiting for repairs where costs were carefully (?) kept and everything had to be charged. The old locomotive came in for all doubtful and odd charges until, at the end of three months, it had $5,000 charged against it.

If time is wasted it should be known, as surely as if material is wasted, and should be considered a reflection upon the system rather than upon the individual. The trouble is that where standards are lax there is an uncertainty as to where such waste is taking place, and advantage is taken of this to let the matter go.

Cost keeping as above is becoming necessary to comply with the requirements of the Interstate Commission.

The phase of the situation which is the peculiar problem of today; that is, the bringing of the human factor in the machine up to standard—is first and last a matter of men, the production of highly trained men, for however efficient in design an organization may be, its real efficiency is measured largely by the human element. Unfortunately, under present conditions, a man enters railway life at the point of least resistance and gets where he can by force of circumstances and native wit. The result is that thousands of men are struggling to hold positions for which by nature they are largely unfitted. For many railway positions men are selected, the unfitted being rejected. Why should this not be the case for all? For practically every class of material used specifications have to be complied with, and a certain standard attained to be accepted. Why should this not be the case with men? Psychology has made such strides that it is conceivable that a bureau for the purpose could in a short time pass upon all applicants, and after deciding upon their general fitness or unfitness for railway work, guide as to what particular class of work they are best adapted for. The present method of "trying men out" is both crude and expensive. How often it happens that for important work it is only after half a dozen "trys" a "hit" is scored. Inefficiency is often as much a matter of circumstances as any fault of the individual under present conditions.

When once accepted for railway service a boy or man should have definitely placed before him the necessity for qualifying for the position ahead, and failure to respond should be taken as an indication of unfitness for his particular work or lack of ambition and the case should be dealt with accordingly. Vocational training has many enthusiastic advocates among railway officers, and is more or less the practice on some of our large systems, so that the material is not wanting for the elaboration of this idea.

It was by such means as have been outlined that the German army became well nigh invincible, and the nation which has been referred to as a nation of "Damned Professors" has in a generation by scientific administration and rational educational training of its people, notwithstanding the poverty of its natural resources, passed from inefficiency to the front rank among the nations as regards efficiency.

The nucleus of the foregoing exists on the railways as operated today and all that is needed is that present practice should be brushed up and rounded out to meet expanding needs, and more thoroughly understood by all concerned. Speaking generally, what we need is a better understanding between head and hand, the proper blending of theory and practice; the creation of a feeling down to the last man that the railway interests are his interests and that in furthering its interests he is furthering his own.

The foregoing paper was read before the Canadian Railway Club in Montreal recently.

Birthdays of Transportation Men in October.

Many happy returns of the day to: -

R. A. Burford, cashier, C.P.R. ticket office, New York City, born at Brooklyn, N.Y., Oct. 4, 1878.

T. C. Burgess, Commercial Agent, G.T.R., Minneapolis, Minn., born at New York City, Oct. 2, 1853.

G. E. Burns, Freight Claims Agent, Eastern Lines, C.P.R., Montreal, born at St. Thomas, Ont., Oct. 6, 1863.

K. J. Burns, Assistant General Freight Agent, Great Northern Ry., Vancouver, B.C., born at Rochester, Eng., Oct. 11, 1878.

F. F. Busteed, C.E., Engineer in charge of C.P.R. revision and second tracking, west of Calgary, Kamloops, B.C., born at Battery Point, Que., Oct. 10, 1858.

C. E. Cartwright, M. Can. Soc. C.E., ex-Division Engineer, C.P.R., Vancouver, B.C., born at Toronto, Ont., Oct. 13, 1864.

G. S. Cooke, Superintendent, Grand Trunk Pacific Ry., Melville, Sask., born at Montreal, Oct. 27, 1875.

A. F. Dion, Traffic Agent, Quebec Harbor Commission, Quebec, born at L'Islet, Que., Oct. 1, 1871.

L. V. Druce, Commercial Agent, G.T.R. and G.T.P.R., Vancouver, B.C., born at London, Eng., Oct. 20, 1873.

C. E. Dewey, Freight Traffic Manager, G.T.R., Montreal, born at Cheshunt, Eng., Oct. 2, 1873.

C. E. Friend, General Auditor, Canadian Northern Ry., Winnipeg, born at Brighton, Eng., Oct. 12, 1871.

W. P. Fitzsimmons, Commissioner of Industries, G.T.R., Montreal, born at Detroit, Mich., Oct. 27, 1868.

A. H. Harris, Special Traffic Representative, C.P.R., Montreal, Que., born in Devonshire, Eng., Oct. 15, 1855.

G. Hodge, General Superintendent, Eastern Division, C.P.R., Montreal, born there Oct. 2, 1874.

J. H. Hughes, Assistant Superintendent, District 2, Eastern Division, Smith Falls, Ont., born at Charlottetown, P.E.I., Oct. 7, 1865.

H. Irwin, M. Can. Soc. C.E., Consulting Right of Way and Lease Agent, C.P.R., Montreal, born at Newgrove, County Down, Ireland, Oct. 27, 1847.

J. W. N. Johnstone, General Passenger Agent, Reid Newfoundland Co., St. John's, Nfld., born at Campobello, N.B., Oct. 4, 1878.

S. Way Kent, Ticket Agent, C.P.R., Paris, Ont., born in Brant County, Ont., Oct. 23, 1879.

W. M. Kirkpatrick, Assistant Freight Traffic Manager, Eastern Lines, C.P.R., Montreal, born at Kingston, Ont., Oct. 8, 1874.

W. B. Lanigan, Assistant Freight Traffic Manager, Western Lines, C.P.R., Winnipeg, born at Three Rivers, Que., Oct. 12, 1861.

J. W. Leonard, Assistant to Vice President, C.P.R., Montreal, born at Epsom, Ont., Oct., 1858.

C. F. Lunan, Assistant Commissary Agent, C.P.R., Calgary, Alta., born at Sorel, Que., Oct. 2, 1879.

Sir William Mackenzie, President, Canadian Northern Ry., Toronto, born at Kirkfield, Ont., Oct. 30, 1849.

W. T. Marlow, Import Freight Agent, C.P.R., Montreal, born at Limerick, Ireland, Oct. 25, 1872.

R. Marpole, General Executive Assistant, C.P.R., Vancouver, B.C., born in Montgomeryshire, Wales, Oct. 9, 1850.

H. Paton, President, Shedden Forwarding Co., Montreal, born at Johnstone, Renfrew, Scotland, Oct. 5, 1852.

D. Pottinger, I.S.O., ex-Assistant Chairman, Government Railways Managing Board, Moncton, N.B., born at Pictou, N.S., Oct. 7, 1843.

H. G. Reid, Master Mechanic, Lake Superior Division, C.P.R., North Bay, Ont., born at Pembroke, Ont., Oct. 27, 1863.

W. S. Rollo, joint agent, G.T.R., and Central Vermont Ry., St. John's, Que., born at Dundee, Scotland, Oct. 8, 1852.

J. K. Savage, Superintendent, District 1, Saskatchewan Division, C.P.R., Regina, born at Forreston, Ill., Oct. 5, 1876.

Sir Thomas G. Shaughnessy, K.C.V.O., President, C.P.R., Montreal, born at Milwaukee, Wis., Oct. 6, 1853.

T. Duff Smith, Fuel Agent, Grand Trunk Pacific Ry., Winnipeg, Man., born at Barking, Essex, Eng., Oct. 2, 1868.

A. B. Spence, Travelling Auditor, Reid Newfoundland Co., St. John's, Nfld., born at Harbor Grace, Nfld., Oct. 21, 1882.

E. Sterling, Superintendent, Districts 2 and 3, British Columbia Electric Ry., New Westminster, born at Thornbury, Ont., Oct. 3, 1875.

W. S. Taylor, ex-Treasurer, C.P.R., Montreal, born at Dornoch, Sutherlandshire, Scotland, Oct. 18, 1839.

E. N. Todd, Division Freight Agent, Eastern Division, C.P.R., Montreal, born at Huntington, Que., Oct. 17, 1879.

A. W. Wheatley, Manager, Canadian Locomotive Co., Ltd., Kingston, Ont., born at Ashford, Kent., Eng., Oct. 12, 1870.

L. H. Wheaton, Resident Engineer, Dartmouth branch, Intercolonial Ry., Dartmouth, N.S., born at Sackville, N.B., Oct. 5, 1869.

Express Companies Changes in Montreal.

Half a century ago there was established in a small building on St. Francois Xavier St., Montreal, an office of the Canadian Express Co. where, under a joint arrangement, the business of the American Express Co. and National Express Co. was also carried on. At that time four horses and wagons, stabled on the premises, were sufficient to take care of the collection and delivery service in Montreal, as it then existed.

Some ten years ago the headquarters on St. Francois Xavier St. being found too small, were removed to the new Canadian Express Building on McGill St., where commodious offices, expected to be large enough for many years to come, were established. At the same time large stables were built on Chaboilles St. The business has since then grown to such an extent that it now requires about 140 horses and a corresponding number of vehicles, besides several motor trucks, and the premises of 10 years ago are now again found to be entirely inadequate for the present and future requirements of the three companies. By mutual agreement it has been decided that on or about Oct. 1 a separate office will be established at 231 St. James St. for the American and National Express Companies, where care will be taken of the ordinary package express matter, and the financial department of the American Express Co., now located in the Transportation Building at the corner of St. Francois Xavier and Notre Dame Sts. The Canadian Express Co. requires for its exclusive use in its building on McGill St. all the space heretofore occupied jointly by the three companies, and will continue its business there as in the past. The joint branch office in the Transportation Building will be closed and the work now done there will be carried on at the main offices of the companies.

The American and National Express Companies have made arrangements with the G.T.R. for a warehouse and office at the corner of Mountain and St. James Sts., and also have arranged for stable accommodation for the horses and wagons which will be required for their business. Arrangements have been made with the Collector of Customs for sufficient space in the examining warehouse on Youville Square, where all shipment in bond will be handled as heretofore.

The close and friendly arrangements between the Canadian, the American and the National Express Companies for the exchange of traffic continues as heretofore.

Railway Subsidy Contracts.

The Dominion Government has entered into contracts with the following railways under the act granting aid in construction,—

St. John and Quebec Ry., Aug. 1,—from Andover to St. John, N.B., exclusive of two bridges, 200 miles, in lieu of subsidy granted by chap. 48, 1912, sec 2, item 2.

Tillsonburg, Lake Erie and Pacific Ry., Aug. 8,—from Ingersoll north to a junction with the St. Marys and Western Ontario Ry. at Embro, 10.30 miles.

Alberta Central Ry., Aug. 8,—from Red Deer to Rocky Mountain House, 70 miles.

Canadian Pacific Ry., Aug. 8,—from Moose Jaw, Sask., northwesterly, 123 miles.

The Canadian Pacific Railway Company's Policy in the West.

Speaking at a dinner given by the Regina, Sask., City Council, July 28, at which he was the principal guest, George Bury, Vice President, C.P.R., referring to the company's policy, said: For some years past we have been unable to spend the amount of money which the President set aside for betterment and extensions in the West; due to a shortage of labor and material, rails principally. Our policy has been first to enlarge and add new units to our main line terminals, all of which have been greatly increased in capacity within the past nine years, and to build as much double track as possible in order to take care of present and prospective traffic tributary to our present lines; next, to build branch lines into such parts of the country as are well settled, but remote from transportation facilities. If you will give this policy careful consideration, I think you will agree with me that it is in the best interests of the country and of the people as a whole . . . . At present Western Canada, with a population of 2,000,000 people, is importing a large proportion of its necessary food products from the United States, Eastern Canada and elsewhere. The C. P. R. has been preaching for some years that it is not in the interests of the country in general to attempt to market too large a percentage of the Western crops in the three months intervening between the harvest and the close of navigation. The C. P. R., after all, has a larger investment in Western Canada than any other individual or body of individuals and to advocate any policy just to save a little inconvenience or expense in transportation, which would do serious injury to the country, would be exceedingly foolish, and the most extreme detractor of the company has never charged it with being foolish. Many times even within the past year we have had to sacrifice immediate returns in order to provide against future damage to Western Canada. In the fall of 1912 we prepared ourselves fully to handle just as much of the grain crop in two and a half months as the country cared to offer us, and between harvest and the close of navigation we loaded at times more grain than was ever loaded on any single railway in any part of the world in the same time. During Oct. and Nov. we moved from Winnipeg to Fort William over 40,000 loads of grain, and on occasions as many as 1,500 cars of grain a day were being inspected at Winnipeg. About 60% of this grain came from Saskatchewan, the wheat crop of Saskatchewan having grown 575% in eight years. The result of this movement was that the markets of the world could not absorb our grain as fast as it was poured into the eastern elevators, and in the opinion of many this had a depressing influence on the price. It is easy to offer counsels of perfection to the farmer who is anxious to get the money from his crop to pay his bills, but we really must prepare ourselves in some way to encourage and assist him to so market the crop that it will flow steadily and in moderation to the ultimate markets instead of descending in a flood. The cities in the West have been doing everything in their power to attract industries and to build themselves up, but it seems to me that they should likewise give some of their energies to the settling of the country surrounding them, to the encouraging of advanced agricultural methods, looking forward to having the country surrounding them sustaining a large satisfied population, whose trade will build up the cities on a permanent foundation."

Book Reviews.

Any of the books reviewed may be obtained through Canadian Railway and Marine World at the published price.

STEAMSHIP CONQUEST OF THE WORLD.—By Frederic A. Talbot. 344 pages, 8½ by 5½ ins., with illustrations. Price 6s. London, Eng.. William Heinemann.

This is a further volume of the Conquests of Science series which William Heinemann is publishing, and of which Mr. Talbot has contributed three—"The Railway Conquest of the World," "Moving Pictures: How They Are Made and Worked," and the present volume. He has also written a fourth volume, on "Lights and Lighthouses," which will shortly be issued.

The volume is not directly a history of the development of steam navigation, neither does it pretend to be technical, in any definite sense. It is written for the general reader who is a little bit interested in things of this sort, and sets out to give him in an interesting, understandable, and yet correct manner what he wants to know about the history of steam navigation; the development of the steamship of today from the modest beginnings of a century ago; something of the economics of a big liner, and a good deal about the efforts that have been made to minimize loss of life through any one of the dangers of the seas.

While reference is made to the steamships on all the seven seas, attention is mainly directed to the North Atlantic, because it was in the development of the traffic between Europe and North America that the steamship was born, and in which it has been most extensively developed. The text is illustrated by over 140 illustrations, showing the steamship in all stages, from the laying of the keel to its completion; the machinery; the decorations; the boat lowering mechanism; accidents; derelicts and salvage operations, etc.

BEESON'S MARINE DIRECTORY OF the Northwestern Lakes.—H. C. Beeson, Chicago, Ill.

The 27th annual issue contains complete lists of all U.S. and Canadian vessels on the Great Lakes, with details of their engines and boilers, and various other data useful to all those concerned with lake navigation in any way. In addition, there are concise records of the proceedings of the lake navigation associations and interesting descriptions of the many large works which have been, or are being carried out at various important points, those relating to Canada being exhaustively dealt with. It is the publisher's intention to continue and extend the descriptive section, so as to cover all the vital points relative to lake navigation and its growth from year to year, and all that is of importance which may transpire in lake marine circles.

HANDBOOK OF ENGLISH FOR ENGINEERS.—By W. O. Sypherd. 314 pages; 4½ by 7 ins. Scott, Foresman and Co., Chicago, N.Y., $1.50.

It is a notorious fact that engineers as a general rule are weak in their use of English, and it is for such as have a failing in this direction that this book has been prepared. That English receives but little attention in the curriculum of our [illegible] colleges, is a fact to be deplored, but it is a condition that has arisen through the large amount of technical work to be covered by the students in the usual four years of academic work. The elimination of that which appeared to be the least important has placed the study of English in a minor position, and while this is to be regretted, there appears to be but small chance of remedying the trouble without extending the length of what to some appears an already long enough course. This little work should be of great value to those who wish to improve themselves, and while all the standards as set forth in the book do not appeal to us as being the best practice, they are nevertheless outlined and classified in such a convenient and easily accessible manner that while the letter of the book need not be followed, many helpful suggestions may be derived. Chap. 1 is a dissertation on the general problems of engineering writing, comprising sections of introductory, the preparation of engineering papers, and exercises for practice. Chap. 2 is on mechanical details common to the various forms of technical writing, giving a list of abbreviations, etc. Chap. 3 is on business letters, analyzing the business letters, and giving numerous examples. This chapter appears to us to be the weakest, some of the forms followed not meeting our views of good practice. Chap. 4 is on reports, and Chap. 5 on articles in technical journals. Both these chapters are excellent, the former giving the young engineer good examples to follow, and the latter, a selection of good articles from several of the best of United States technical journals. Another important part of the book is an appendix, giving examples of how to prepare copy for the printers, and the manner of correcting proofs. Examples of faulty paragraphs, and misspelled words follow in a second appendix. A bibliography of works on English is given at the end for those who wish to carry on a more extended study of the language.

Quebec Bridge Construction.

In a recent conversation J. T. Davis, of M. P. and J. T. Davis, said his firm expects to have the substructure for the bridge completed early in November, so far as the piers, etc., on the north side of the river are concerned. The work on the south shore is not expected to be completed until the fall of 1914. The work on the north shore piers involved the building of 106,000 cubic feet of masonry above the caissons, of which over 90,000 cubic feet was reported in place, July 30.

The St. Lawrence Bridge Co., which has the contract for the manufacture and erection of the superstructure, is making good progress with its share of the work. Over 60,000,000 lbs. of steel has been delivered and is in store at the bridge site. Work has been started on the erection of the two first spans from the abutment to the intermediate pier. The plant for the erection of the big spans is being delivered, and preparations are being made for the building of these from both sides. J. D. Wilkins is engineer in charge for the Dominion Government.

The Hudson Bay Railway Bridge at Pas, Man.

Bridge at Pas.—The illustration on this page shows the bridge which has been built over the Saskatchewan River, at Pas, Man., to connect the line which the Government is building from that point to Hudson Bay, with the Canadian Northern Ry. branch line running southwesterly from Pas. The total cubic yards of masonry in piers and abutments is about 7,000. As much as 24 ft. of water was encountered at some of the piers at low water, and 42 ft. at high water, the current being about 4 miles an hour. The bottom was hardpan, covered with small boulders, necessitating the use of steel sheet piling. About 1,000,000 lbs. of the Lackawanna type was used. The piers rest upon the natural bottom at an average of about 8 ft. below the water. This portion of the work was done by Mackenzie, Mann & Co., Ltd. The superstructure is a rivetted truss designed as "class heavy" of the Department of Railways and Canals, with a highway 12 ft. clear bracketed to each side; the total weight being a little over 2,700,000 lbs. There are four fixed spans of 147 ft. each and a swing span of 262 ft., 850 ft. over all. The width of the piers for the fixed spans is 9 ft. 10 ins., and length 34 ft. 4 ins., these dimensions being over the coping. The diameter of the pivot pier is 26 ft. The swing span superstructure was fabricated and erected by the Canada Foundry Co.

The Hudson Bay Railway Bridge at Pas, Man.

G.T.R. Branch St. John's Ambulance Association.—The following have been elected as the first officers and council of the G.T.R. centre of the Canadian Branch of St. John's Ambulance Association:—Hon. President, E. J. Chamberlin; Hon. Vice President, W. Wainwright; Hon. Treasurer, F. Scott; Hon. Secretary, F. A. Bourne; Council—H. G. Kelley, M. M. Reynolds, R. S. Logan, J. E. Dalrymple, W. H. Biggar, K.C., D. E. Galloway, W. H. Ardley, W. D. Robb, J. Coleman, Dr. J. A. Hutchison, Dr. H. B. Carmichael, T. McHattie, A. A. Maver, J. Hendry, D. [illegible], T. W. H. McKee, O. G. Barker. It was stated at the meeting at Montreal, July 30, when these officers were elected, that for over 25 years the G.T.R. had had ambulance classes at various points on the system, but that it had not had a central organization, nor had it been connected with the St. John's Ambulance Association.

Albert Davidson, General Agent, Grand Trunk Pacific Ry., Prince Rupert, B.C., in renewing his subscription, wrote, "I have read Canadian Railway and Marine World with interest for over ten years."

Resuscitation From Apparent Death From Electric Shock.

The Board of Railway Commissioners has issued the following circular: "Attention is directed to circular 37 issued by the Board May 3, 1909, regarding rules for resuscitation from apparent death from electric shock. These rules have recently been revised under the auspices of the National Electric Light Association, T. C. Martin, Secretary, 33 West 39th St., New York. The Board deems it advisable that you should secure copies of them, and have them posted in conspicuous places in every department, so that the knowledge therein contained shall be spread amongst all officials and employees of your institution.

"Attention is also directed to the advisability of warning employes about the absolute necessity of keeping away from all electric light or power lines. On Feb. 28, 1913, near Ingersoll, Ont., one railway man was killed by coming in contact with an electric power line through the medium of a tape line which he was using to measure the clearance between the rails and the wires. He and his companions had acquired the bad habit of throwing a string over the power wires in order to determine the distance between the wires and rails. On the occasion in question, as there was no string at hand, these men used a cloth tape line and, unknown to them, a light copper mesh, which was woven within the tape line, conveyed current from the power line through one of the men to the ground with fatal results.

"Two things are to be impressed upon your employes, first, to keep away from all electric wires; and, second, to become familiar with the rules for the resuscitation of persons apparently killed by electric shock; and to put those rules into operation when the occasion arises."

Suez Canal Traffic for 1912 amounted to a net tonnage of 20,275,120 against 18,124,799 tons in 1911. In 1912 the vessels passing through the canal numbered 5,373. In spite of the reduction on Jan. 1 in the transit dues, from 7.25 to 6.75 francs a ton the gross receipts amounted to the record figure of 136,423,831 francs compared with 134,762,199 francs in 1911.

Kingston and Pembroke Ry.—At the annual meeting at Kingston, Ont., Aug. 12, the following were elected directors for the current year,—W. D. Matthews, D. McNicoll, I. G. Ogden, G. M. Bosworth, W. R. Baker, E. W. Beatty, A. R. Creelman, H. E. Suckling and W. F. Nickel.

Increase of Freight Rates in England.

The following quotations from recent articles in the London Times are of interest as relating to existing conditions in Canada:

"A notice has been issued on behalf of the railway companies of the United Kingdom to the effect that the rates for merchandise traffic by goods and passenger trains has, with certain exceptions, been increased. This increase is the outcome of the recently passed Railways Act, which gives the companies power to raise rates to compensate them for increased expenses as a result of the settlement of the strike of August, 1911."

"The railway industry alone of any great industry in the country has been deprived by Parliament of the opportunity of passing on to the public what may be called its increasing 'cost of production.' We mean in particular the increased cost of coal, materials, higher wages, Government insurance against accident, unemployment, etc. In other words, all improvement in railway wages and in the conditions of railway employment—and they have, of course, been substantial already—have been effected either at the cost of the shareholders, or they have come out of the funds provided by improved methods of management. If the just demands for further improvement in railway labor conditions are to be met without wrecking the whole financial edifice upon which the public industry rests, it is clear that the public must pay. If only to secure continuity of railway service, absence of strikes, etc., some moderate increase in railway charges must be established, and this is the policy which the companies are now endeavoring to carry out under the direct authority of Parliament. Opposition will, of course, be encountered, but so long as the companies, acting in unison, are not extravagant in their demands and keep them well within the terms provided for by the new Act, we do not imagine that any such opposition can avail when the matter comes before the Railway and Canal Commissioners, as it must do sooner or later. Legally and morally the claim of the railway companies is a just one, for it would be absurd to assume that the railway industry alone can flourish under economic conditions which provide for fixity of its charges to the public on the one hand, and rapidly increasing expenses on the other."

Chicago, Milwaukee and St. Paul Ry.—Press reports state that the British Columbia Government has arranged to turn over the Kitsilano Indian Reserve at Vancouver, to the C. M. and St. P. Ry., for terminal purposes, and that the Canadian Northern Ry. is interested in the project. The question of title between the Dominion and the Provincial Governments has not been finally settled, as proceedings for the abandonment of the reserve by the Indians, under the terms of the Indian Act, have not yet been taken. Under the present arrangements the C. M. and St. P. Ry. will secure an entrance into Vancouver over the Great Northern Ry. (Aug., 1912, pg. 411.)

Pacific and Hudson Bay Ry.—Press reports state that a line is being surveyed from Bella Coola, B.C., to Alexis Creek, thence across the Cariboo River between mileage 103 and 105, to Beaver, B. C. E. Both, Bella Coola, B.C., is reported to be in charge of the surveys. (May, pg. 220.)

Orders by Board of Railway Commissioners.

Beginning with [illegible] Canadian Railway and Marine World has published [illegible] summaries of orders passed by the Board of Railway Commissioners [illegible] the Board's [illegible]

The dates given of orders, immediately following the [illegible] for a considerable time after the dates assigned to them.

19886. July 24.—Extending, to Aug. 31, time within which C.P.R. and G.T.R. install bells at crossing of Perth Road, near Kingston, Ont.

19887. July [illegible].—Extending, to Oct. [illegible], time within which C.P.R. install gates at crossing of Centre St., Chatham, Ont.

19888. July [illegible].—[illegible] Pacific Branch Lines Co.'s station at siding [illegible], Sec. [illegible], Sask., mileage [illegible], [illegible] Branch.

19889. July 24.—Extending, to Oct. 15, time within which G.T.R. install interlocking plant at Paris Jct., Ont.

19890. July 24.—Authorizing Chatham, Wallaceburg and Lake Erie Ry. to take Lot 18, Chatham, Ont., for accommodation of the traffic and to secure efficient maintenance and operation of its line.

19891. July 24.—Approving location of Canadian Northern Ry. station at Radville, Sask.

19892. July 21.—Authorizing M.C.R. to build extension to siding on Moore St., between Centre and Talbot Sts., St. Thomas, Ont.

19893. July 24.—Ordering G.T.R. to install electric bell at crossing of Mill St., Milverton, Ont., to be completed within 60 days, 20 per cent. of cost to be paid out of the railway grade crossing fund.

19894. July 24.—Approving location of C.P.R. station at Nolan, Alta.

19895. July 24.—Ordering G.T.R. to remove board fence and cut down bank on its right of way at Marsh Winery Road, Stamford, Ont., for 930 ft., so that no portion of bank be more than 4 ft. above track level.

19896. July 25.—Approving location of C.P.R. station at Arnaud, Man.

19897. July 25.—Approving G. T. Pacific Ry. bylaw 14, superseding bylaw 11, authorizing J. E. Dalrymple, Vice President, and A. E. Rosevear, General Freight Agent, to prepare and issue tariffs of tolls, and rescinding order 15186, Oct. 25, 1911.

19898. July 25.—Authorizing James Bay and Eastern Ry. to build across concession road at mileage 38; side road at mileage 38.7, Mill Road at mileage 39.3, road to Mount Albert, mileage 40.35, side road, mileage 40.6, and side road, mileage 41.6, Gwillimbury Tp., Ont.

19899. July 25.—Authorizing G. T. Pacific Branch Lines Co. to carry passenger traffic over portion of its Tofield-Calgary Branch, between Trochu, mileage 121.4, and Beiseker, mileage 162.6, Alta.; speed of trains not to exceed 12 miles an hour.

19900. July 25.—Approving location of C.P.R. station at Corwhin, Puslinch Tp., Ont.

19901. July 25.—Authorizing Webb Rural Municipality 138, Sask., to build crossings over C.P.R. at Antelope, Gull Lake and Seward, Sask.

19902. July 25.—Authorizing G. T. Pacific Ry. to carry traffic on portion of main line east of Prince Rupert, B.C., between Beament, mileage 195, and Morricetown, mileage 205; speed of trains not to exceed 25 miles an hour.

19903. July 23.—Authorizing Toronto, Hamilton and Buffalo Ry. to build interlocking plant where it crosses Hamilton St. Ry., on Barton St. East.

19904. July 24.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to build by means of a bridge across William St., Cobourg, Ont., at mileage 12[illegible].34 from Glen Tay.

19905. July 25.—Ordering C.P.R., within 90 days, to install improved type of illuminated electric bell at crossing of highway at mileage 0.01 from St. Martins Jct., Que., 20 per cent. of cost to be paid out of the railway grade crossing fund.

19906. July 22.—Ordering that signboards be erected at crossings on C. Sheriff's farm, Huntingdon, Que., crossed by G.T.R. and N.Y.C. & H.R. Rd.

19907. July 25.—Ordering Pere Marquette Rd., within 60 days, to install an improved type of automatic electric bell at crossing of highway near Kingsville, Ont., 20 per cent. of cost to be paid out of the railway grade crossing fund.

19908. July 25.—Approving location of C.P.R. station at North Appin, Ont.

19909. July 26.—Approving change in location plan of Campbellford, Lake Ontario and Western Ry. (C.P.R.) to include extra land required for station grounds at Cherrywood, Pickering Tp., Ont., and approving location of station there.

19910, 19911. July [illegible], 28.—Authorizing Dominion Atlantic Ry. to operate over bridges over Sissiboo and Gaspereaux Rivers, N.S.

19912. July 25.—Ordering Campbellford, Lake Ontario and Western Ry. (C.P.R.) to build farm crossing for J. D. Howden, in Lot 24, Con. 2, Whitby Tp., Ont.

19913. July 28.—Authorizing G.T. Pacific Ry. [illegible]

[illegible] spur for John MacGregor Co., at mileage 45.16 from Aroostook Jct., N.B.

19916. July 24.—Ordering that in connection with protection of G.T.R. crossing over Yonge St., 1.5 miles south of Aurora, Ont., mileage 28.66, the side road be diverted into Yonge St.; land to be deeded to the Township by G.T.R., work to be performed by King Tp., electric bell to be installed at crossing of Yonge St. within 60 days; 20 per cent. of cost to be paid from railway grade crossing fund.

19917. July 26.—Approving location of C.P.R. station at [illegible], B.C.

19918. July 28.—Approving plan A showing details of interlocking plant of C. N. Ontario Ry. and C. N. Montreal Tunnel and Terminal Co. with Jacques Cartier and Union Ry., near Jacques Cartier Jct., Que.

19919. July 31.—Ordering G.T.R. to build siding to connect with existing siding for Greenfield Conduit Co. and others who may wish to use same in rear of Broadview Ave., Toronto.

19920. July 24.—Amending order 19348, May 16, re cattle pass on C. N. Ontario Ry. for [illegible] Fletcher and J. Wilson.

19921. July 25.—Authorizing C.P.R. to build spur for Revelstoke Saw Mill Co., Swift Current, Sask.

19922. July 28.—Amending order 19856, July 12, ordering Brockville, Westport and Northwestern Ry. to build cattle pass for D. H. and C. S. Grey.

19923. July 28.—Authorizing C.P.R. to build spur for Saskatchewan Motor Co., Regina, Sask.

19924. July 26.—Authorizing G.T.R. to build sidings for Alabastine Hard Mortar, Ltd., York Sand & Gravel, Ltd., and York Sandstone & Brick Co., Scarboro Tp., Ont.

19925. July 31.—Dismissing application of G. C. Cumming, of Lyn, Ont., to compel G.T.R. to build a subway between Lyn and Brockville, mileage 12[illegible].77 from Montreal.

19926. July 31.—Approving agreement dated July 29, providing for proposed new viaduct and plans and profiles referred to in agreement dated April 25, between the City of Toronto, C.P.R., G.T.R. and Toronto Harbor Commissioners. Work to be completed within 3 years from July 29.

19927. July 31.—Amending order 19288, May 12, re compensation to be paid W. B. Fee by Georgian Bay and Seaboard Ry. (C.P.R.)

19928. July 30.—Authorizing the Vancouver, Victoria and Eastern Ry. (G.N.R.) to take certain lands in New Westminster District, B.C., and to build bridge over its tracks.

19929. July 29.—Authorizing G.T.R. to build sidings for Harris Abattoir Co. north of St. Clair Ave., Toronto.

19930. July 29.—Approving location of G. T. Pacific Ry. station at mileage 128.5, Prince Rupert East, Cariboo District, B.C.

19931. July 29.—Approving location of Campbellford, Lake Ontario and Western Ry. (C.P.R.) station at Grafton, Ont.

19932. July 29.—Authorizing C.P.R. to build its double tracks across highway diversion at mileage 84.99 from Moose Jaw, Sask., present road allowance to be diverted.

19933. July 29.—Approving location of C.P.R. station on n.e. ¼ Sec. 10, Tp. 8, r. 30, w. 2 m., Sask.

19934. July 28.—Authorizing C.P.R. to build diversion of highway and cross same at mileage 77.91 from Moose Jaw, Sask., present road allowance to be diverted.

19935. July 28.—Approving revised location of C.P.R. from mileage 65.04 to 68.14 and construction of double track between mileage 65.04 and 69.24 from Broadview, Sask., and to build across three highways.

19936. July 31.—Ordering C.P.R. to make connection with Canadian Northern Ry. spur to Government elevator at Port Arthur, Ont., within 30 days, also to be used by G.T. Pacific Ry., cost to be paid by Board of Grain Commissioners.

19937. Aug. 5.—Approving G.T. Pacific Ry. Standard Freight Mileage Tariff C.R.C. 18 to apply between stations in Alberta and British Columbia between and including [illegible], Alta., and mileage 1189, B.C.

19938. July 30.—Approving Hull Electric Co.'s bylaw 40, covering rules and regulations for the government of its employes.

19939. July 19.—Approving revised location Campbellford, Lake Ontario and Western Ry. (C.P.R.) in Lot 23, Con. A, Brighton Tp., and authorizing it to take from G.T.R. extra land required for right of way.

19940. July 30.—Authorizing C.P.R. to build spur for Regina Storage and Forwarding Co., Regina, Sask.

19941. July 29.—Approving C.P.R. revised location from mileage 66.7 to 69.6 from Moose Jaw, Sask.

19942. July 30.—Authorizing C.P.R. to build [illegible]

19946. July 31.—Authorizing C.P.R., until Aug. 1, to operate over G.T.R. crossing at Tecumseh St., Toronto.

19947. July 29.—Authorizing Kingston and [illegible] Ry. to build spur for [illegible] Lumber Co., Palmerston Tp., Ont.

[illegible] application of R. H. Souch, Darlington Tp., Ont., to build a sub[illegible]

19949. Aug. 1.—Amending order 19741, July 3, which authorized Campbellford, Lake Ontario and Western Ry. (C.P.R.) [illegible] mileage 89.9, Murray Tp.

19950. Aug. 2.—Amending order 19815, July 17, which authorized City of Regina to build its municipal railway across C.P.R. Arcola Branch and spur by substituting C.P.R. for C.N.R.

19951. July 29.—Authorizing C.P.R. to build road diversion in [illegible]

19952. July 30.—Authorizing C.N. Ontario Ry. to open for traffic the extension of its main line to connect with [illegible] Eastern Ry. [illegible] to 239.

19953. July 30.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to cross Bogart Ave. and Wilkie St., Belleville, Ont., at mileage 78.46 and 78.61 from Glen Tay.

19954. July 29.—Authorizing G.T.R. to build spur for Dowsley Spring and Axle Co., Chatham, Ont.

19955. July 29.—Approving revised location G. T. Pacific Branch Lines Co.'s Tofield-Calgary Branch [illegible] Alta.

19956. Aug. 2.—Approving plan of C.N. Ontario Ry. [illegible] crossing Montreal Park and Island Ry. at Sault au Recollet, Que.

19957. Aug. [illegible].—Amending [illegible] which authorized Toronto Suburban Ry. to cross G.T.R. at Acton, Ont., and authorizing crossing at another point.

19958. Aug. 8.—Authorizing C.P.R. to build its Forsyth St. Branch across certain highways in Maisonneuve, Que.

19959. Aug. 1.—Authorizing C.P.R. to change location of siding across De Gaspe Ave., and to build extension to [illegible] in St. Louis, Montreal.

19960. Aug. 6.—Authorizing C.P.R. to build spur for Imperial Wire & Cable Co. [illegible]

19961. Aug. [illegible].—Approving [illegible] C.P.R. as [illegible] Campbellford, Lake Ontario and Western Ry. (C.P.R.), at Glen Tay, Ont.; and approving location of C.P.R. there.

19962. Aug. 1.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to build at grade across 13 highways in Belleville, Ont.

19963. Aug. 8.—Amending order 16913 re crossing of highways by [illegible] Ry. and [illegible] Co. (C.P.R.)

19964. Aug. [illegible].—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) [illegible] bridge over Moira River, at Belleville, Ont.

19965. Aug. 6.—Ordering C.P.R. to provide cattle pass for R. J. Patterson, [illegible], Ont.

19966. Aug. 1.—Authorizing C.P.R. [illegible] additional track across Bloor St., Lansdowne Ave. and Brock Ave., Toronto.

19967. Aug. 5.—Approving clearances of C.P.R. siding at Colonial Wire Manufacturing Co.'s warehouse, Montreal.

19968. Aug. 6.—Authorizing Canadian Northern Ry. to build across certain highways on its [illegible] Line.

19969. Aug. 5.—Ordering Canadian Northern Ry. to erect a standard passenger and freight shelter station and platform at [illegible] within 60 days.

19970. Aug. 6.—Authorizing Canadian Northern Ry. to build spur for [illegible] Donald & Co., near [illegible], Man.

19971. Aug. 5.—Authorizing Canadian Northern Ry. to build across and divert [illegible] between Sec. 36, Tp. [illegible] and [illegible] on its Alsask [illegible]

19972. Aug. 5.—Authorizing [illegible] Northern Ry. to build across [illegible] Brantford Tp., Ont.

19973. Aug. [illegible].—[illegible] proposed [illegible] Toronto [illegible]

19974. Aug. 2.—Amending order 5850 authorizing Toronto and Niagara Power Co. to carry wires over G.T.R. at Davenport Road, Toronto, Ont.

19975. July 30.—Approving Lake Erie and Northern Ry. location from [illegible] Brantford, Ont. [illegible]

[illegible]

19977. Aug. 7.—Authorizing C.P.R. to use certain bridges.

19978. Aug. 7.—Relieving G.T.R. from [illegible]

[illegible] of passenger station.

10081. Aug. 7.—Relieving Windsor, Essex and [illegible]

[illegible] Ry., G.T.R. and C.P.R. to operate trains over [illegible]

[illegible] m., Didsbury, Alta.

19986. Ang. 9.—Approving location of C.P.R. shelter at Hillhead, Ops Tp., Ont.

1998[illegible]. Aug. [illegible]—Dismissing application of Board of Trade, Limerick, Sask., for order direct- [illegible]

[illegible]

10000. Ang. 9.—Authorizing C.P.R. to build [illegible] Richmond St. and [illegible]

[illegible] Toronto.

19994. Aug. 11.—Approving location of C.P.R. Gimli to Riverton Branch, from Gimli northerly to Riverton, Man., mileage 0, to 26.03; and authorizing building across certain highways.

[illegible]

19996. Aug. 12.—Authorizing C.P.R. to build, at grade, additional track across certain highways [illegible] Sask.

19997. Aug. 12.—Authorizing C.P.R. to build, at grade, its ballast pit spur, at Carseland, across [illegible] R. 26, w. 4 m.

19998. Aug. 13.—Approving change in location of C.P.R. station at Putnam, Ont.

[illegible]

20000. Aug. 12.—Authorizing C.P.R. to build extensions to sidings for Dominion Government [illegible] Petewawa, [illegible]

20001. Aug. 13.—Approving location of C.P.R. [illegible] Sask.

20002. Aug. 11.—Authorizing [illegible] kirk and Lake Winnipeg Ry. Co. to build subway [illegible] Branch [illegible]

20003. July 28.—[illegible] within which half interlocking plant was to be installed at Adelaide St., London, Ont., and authorizing C.P.R. to operate trains over cross- [illegible]

[illegible] bia Ry., [illegible] izing G.T.R. to build [illegible] days.

[illegible] Aug. 14.—Amending order [illegible] re C.P.R. crossing of Anderson St., [illegible] Sask.

20019. Aug. 15.—Approving location of C.P.R. station at Rom[illegible], Alta.

20020. Aug. 13.—Approving portion of location of C.P.R. Snowflake westerly branch from mileage 0 to 9.10.

20021. Aug. 13.—Authorizing Toronto, Hamilton and Buffalo Ry. to build bridge across Welland River at Coyle, Ont.

20022. Aug. 14.—Approving change in Campbellford, Lake Ontario and Western Ry. (C.P.R.), to include extra lands required for station grounds at mileage 137.2 from Glen Tay; and approving location of station building there.

20023. Aug. 14.—Authorizing C.P.R. to build across roadway, at grade, in Lot 1088, Kootenay District, mileage 48.69 from Golden, B.C.

[illegible] Aug. [illegible]—Authorizing C.P.R. to build [illegible] Don viaduct, near Donlands, Ont.

20025. Aug. 11.—Recommending to Governor in Council for approval, The Hull Electric Co.'s bylaw 40, and rules and regulations for the government of its employes; and rescinding order 10930 in same connection.

20026. Aug. 13.—Authorizing R. H. Edgar, Bowling Green, Ont., to erect telephone line across C.P.R. at Lot 3, Con. 4, Amaranth Tp., Ont.

20027. Aug. 14.—Authorizing Dominion Atlantic Ry. to build bridge 125.9 at Jordantown Road crossing, N.S.

20028. Aug. 13.—Further extending for six months from date, time within which Esquimalt and Nanaimo Ry. was required to file standard tariff of maximum freight tolls.

20029. Aug. 13.—Authorizing C.P.R. to build bridge 39.4, Toronto Subdivision.

20030. Aug. 14.—Authorizing C.P.R. to build [illegible] subways at [illegible] and Main Streets, and East Kildonan Road.

20031. Aug. 14.—Authorizing C.P.R. to make alterations in foot bridge at Wallace Ave., to carry it over the third track which it is now [illegible] West Toronto.

20032. Aug. 14.—Authorizing C. N. Ontario Ry. to build subway over public road on Lots 81 and 82, Ste. Dorothee Parish, Que.

20033. Aug. [illegible]—Approving location of Canadian Northern Ontario Ry. station grounds at [illegible] Ottawa.

20034. Aug. 14.—Authorizing Canadian Northern Ry. to open for traffic portion of its diverted line, Oak Point Branch, from Sec. 21, Tp. 11, R. 2, e.p.m., 3.27 miles.

20035. Aug. 14.—Authorizing G. T. Pacific Ry. to cross highway at mileage 210.4, Ellice Municipality, Shoal Lake District.

20036. Aug. 15.—Approving location of G. T. Pacific Ry., Prince Rupert, B.C., westerly from mileage 2.25 at Seal Cove, to mileage [illegible]

20037. Aug. 14.—Authorizing G. T. Pacific Ry. to build spur for C. S. Hyman & Co., Calgary, Alta.

20038. Aug. 14.—Authorizing G. T. Pacific Branch Lines Co. to build Third St., under its line at mileage 46.8, Battleford, Sask.

20039. Aug. 13.—Relieving G.T.R. from providing further protection at Brant House crossing, east of Burlington station, Ont.

20040. Aug. 8.—Authorizing certain alterations in Campbellford, Lake Ontario and Western Ry. (C.P.R.), to provide station grounds in Bowmanville, Ont.

20041. Aug. [illegible] for completion of spur for Coquitlam Terminal Co., Vancouver, by C.P.R., across Dominion, [illegible]

20042. Aug. 9.—Authorizing C.P.R. to build branch for General Fire Extinguisher Co., Montreal.

20043. Aug. 12.—Dismissing application of Lethbridge Board of Trade against cancellation of G.N.R. tariff, C.R.C. 720, between stations on various lines in Eastern Canada and Alberta Ry. and Irrigation Co.'s stations.

20044. Aug. 13.—Authorizing C.P.R. to revise portion of its Farnham Subdivision, Que., and to build additional track across Central Vermont Ry.

20045. Aug. 14.—Amending order 19803, July [illegible] C.P.R. [illegible]

20046. Aug. 5.—Authorizing Canadian Northern Ry. to build spur for McKenzie Ellis Co., Prince Albert, Sask.

[illegible] Islington, Ont., from 75c. to 70c. a ton; effective not later than Sept. 1.

20048. Aug. [illegible] order 19916, July 31, re C.P.R. crossing of G.T.R. at Tecumseh [illegible] Toronto.

20049. Aug. 13.—Amending order 1669, Apr. 15, 1908, re Toronto and Niagara Power Co. carrying its wires across C.P.R., in Lot 6, Con. 3, [illegible]

[illegible] bellford, Lake Ontario and Western Ry. (C.P.R.), [illegible]

20051. Aug. 12.—Amending order 19239, May 9, re protection at King St., Cobourg, Ont., pro- [illegible] paid by G.T.R.

20052. Aug. 12.—Authorizing G.T.R. to build two branch lines for Riordon Pulp and Paper Co., Hawkesbury, Ont.

20053. Aug. 14.—Authorizing G.T.R. to renew bridge 5, King St., Toronto.

20054. July 29.—Authorizing G. T. Pacific Branch Lines Co. to cross Harry and Francis Sts., Calgary, Alta.

20055. Aug. 9.—Approving G.T.R. plans and specifications of repairs to Little Creek Drain, in Tilbury North Tp., Ont.

20056. Aug. 12.—Rescinding order 5390, Aug. 13, 1908, re application of A. Pilon, Casselman, Ont., respecting a charge of $3 a car made by G.T.R. for switching.

20057. Aug. 13.—Ordering Canadian Northern Ry. to fence right of way on its Rossburn Branch, Man., from mileage 35 to 40, by Sept. 1.

20058. Aug. 11.—Authorizing W. Alexander, Silverwood, Sask., to build spur across Canadian Northern Ry. to n. e. ¼, Sec. 15, and n. w. ¼, Sec. 14, Tp. 37, R. 5, w. 3 m., Cory Municipality, Sask.

20059. Aug. 7.—Amending order 18616, re public road between Cons. 12 and 13, Chisholm Tp., Ont., by approving diversion shown on plan filed by C. N. Ontario Ry.

20060. Aug. 13.—Authorizing C. N. Ontario Ry. to cross and divert public road in Lot 38, Con. 8, Ferris Tp.

20061. Aug. 13.—Authorizing Canadian Northern Branch Lines Co. to cross 30 highways on its Grosse Isle Branch.

20062. Aug. 13.—Approving location of station grounds of Interprovincial and James Bay Ry., at mileage 9.56, Mercier Parish, Que.

20063. Aug. 11.—Approving terms of Bell Telephone Co. contract forms 1 and 2, in so far as they limit company's liability.

20064. Aug. 13.—Authorizing St. Lawrence Pulp and Lumber Corporation to cross Atlantic, Quebec and Western Ry. in Gaspe County, Que.

20065. Aug. 12.—Authorizing G.N.R. to remove frog and switch at crossing at Crescent, B.C., and to build new switch there.

20066. Aug. 15.—Authorizing C.P.R. to build spur for J. Gunn and Sons, Winnipeg, Man.

20067. Aug. 15.—Authorizing C.P.R. to rebuild bridge 5.7 over Mill St., Norwood, Ont.

20068. Aug. 15.—Authorizing Canadian Northern Ry. to build spur for Manitoba Gypsum Co., near Moosehorn, Man.

20069. Aug. 12.—Authorizing Canadian Northern Ry. to build branch through Block 6, Hudson Bay Reserve.

200070. Aug. 15.—Authorizing G. T. Pacific Branch Lines Co. to cross 14 highways in Battleford, Sask.

20071. Aug. 15.—Approving clearance of coal conveyer on C.P.R. at sidings of Ontario National Brick Co., Toronto Tp., Ont.

20072. Aug. 14.—Authorizing Bell Telephone Co. to erect wires and poles upon 21 streets in Montreal.

20073. Aug. 15.—Approving proposed scale P to Express Classification for Canada.

20074. Aug. [illegible]—Amending order [illegible] to provide charges for cream up to 400 miles, to become effective not later than Sept. 18.

20075. Aug. 15.—Authorizing C.N. Ontario Ry. to build temporary level crossing over public road between Cons. B and 2, Westmeath Tp.

20076. Aug. 14.—Authorizing C.P.R. to build [illegible] St. Roch St., Quebec, to storage yard.

20077. Aug. 15.—Approving location of C.N. Ontario Ry. station grounds at Westmeath, mileage 79.64 from Ottawa.

20078. Aug. 19.—Authorizing C.P.R. to build three extra tracks at grade across Jamieson St., Lacombe, Alta.

20079. Aug. 15.—Authorizing C.P.R. to revise grade of crossings necessitated by double track; and to build additional track across certain highways between mileage 10 and 39.1, London Subdivision, Ont.

20080. Aug. 18.—Approving location of C.P.R. station at Bethany Jct., Ont., mileage 38.66, Toronto Subdivision.

20081. Aug. 18.—Amending order 19939 re Campbellford, Lake Ontario and Western Ry. (C.P.R.), revised location in [illegible] Tp., Ont.

20082. Aug. 16.—Authorizing C.P.R. to build [illegible] and Schreiber Subdivisions.

20083. Aug. 18.—Authorizing C.P.R. to operate over [illegible] near Highlands, Que., without first stopping trains.

20084. Aug. 18.—Authorizing C.P.R. to build [illegible] Chapleau, Nipigon and White River Subdivisions.

[illegible] Aug. [illegible]—Authorizing C.P.R. to [illegible] portion of same within its right of way; and to build road diversion in Sec. 3, Tp. 7, R. 29, w. 4 m., Alta.

[illegible]

[illegible] Aug. [illegible]—Authorizing C.P.R. and G. T.R. to operate over crossing one mile north of St. Johns, Que., at mileage 20.85, without first [illegible]

[illegible] Authorizing C.P.R. and [illegible] to operate over [illegible] without first stopping trains.

Railway Transportation Problems of the Future.

By Henry K. Wicksteed, B.A. Sc., M.Can. Soc. C.E., Chief Engineer of Surveys, Mackenzie, Mann and Company Limited, Toronto.

The article under this title in Canadian Railway and Marine World for September by J. Grant MacGregor raises some interesting questions, although his exact meaning is a little hard to follow. That the operating departments use a low standard of gradients as an excuse for getting rid of their obsolete locomotive power at the expense of the construction departments is hardly a reason for abandoning a low grade standard of road in favor of a high one. It is merely an evidence that they are human and that when extra power is being purchased they prefer to keep the new for themselves and send away the old, but is not the mere possibility of employing the old in useful service, instead of consigning it to the scrap heap, an economy and an argument in favor of instead of against the low grade standards? There can be no manner of doubt that having to climb a hill of a given height, the easier the grade ascent the better, the only doubt is as to how much we can afford to pay in money, extra distance, extra curvature, or rise and fall, to accomplish the flattening, and this is not a question which can be reduced to exact figures or formula, because the data are different in almost every case and they vary even for the same road from time to time. A road may be built primarily for carrying a heavy freight traffic in one direction. A few years go by and it is found that a large and increasing tonnage is being carried in the reverse direction and that the grades opposed to it are altogether disproportionate. The road, too, designed originally as a freight road, begins to develop a large passenger business, high speed becomes an object, and the curvature, which was quite unobjectionable in the case of the slow moving freights, becomes almost prohibitive to the "Flying Limited." That no great degree of excellence can be attained without harmony and cooperation between all departments is unquestionable, but I think things are better in this respect than they have ever been before, and improving. Working men have been as a class diffident about airing their views and opinions, especially in print, before college bred engineers possessed of a greater gift of expression, and the latter have been in the past much too ready to believe that they know it all and that the trackman's advice is worthless because it does not accord with their text books, but this condition of affairs is fast being mended and some of the brightest minds are devoting much of their time to encouraging their subordinates and colleagues to talk and to think, and much of the recent progress and interest is due to this movement.

Mr. McGregor lightly touches on one element of location to which perhaps sufficient prominence has not been given, and that is the endurance or steam capacity of the locomotive. We have been too apt to believe that when we have flattened the grade to the last degree that the topography will allow, and a little below the ruling grade of the division, that we have performed the "whole duty of man" and that the length of the grade is of no consequence. This is a great fallacy, for there are plenty of locomotives which can supply the necessary drawbar pull for a short distance, but which fail in boiler capacity or endurance. We may again have the boiler capacity but not the grate area, and we may have both without the proper fuel to give the best results, and lastly, we may have all three, but the opportunity to develop them is limited by the physical ability of the firemen. It is easy to find cases where a short grade of 1% limits the capacity of the road much less than a long one of two thirds that rate of ascent.

Another question which has perhaps received less attention than it should is the judicious introduction of pusher grades. It seems to the writer that there are many cases where a reduction, not only in capital account but in actual operating cost, could be made by keeping a low ruling grade over the greater part of a road, and then sharply ascending a necessary summit, instead of adopting a somewhat steeper standard for the whole road. An entirely new and most interesting proposition was put to the writer within a few days by an engineer familiar with operating conditions in the far north. It may be put somewhat in this way. Ordinary starting resistances are about equivalent to those caused by a 3-10 to 4-10 grade; therefore we say that this grade on the open road is nearly as good as a level—that is, the drawbar pull is no more. But in our winter weather the starting pull is vastly increased by the freezing of the lubricants and other causes, and owing to increased radiation and condensation the load which the locomotive is capable of hauling on the level at fair speed is greatly reduced. Under these circumstances, while a flat grade is always better than a steep one, the relative value, the amount we can afford to spend in reducing the steep grade to the low standard, is very much reduced. It is notable that the three or four months of extremely cold weather are those during which this road is busiest. This is a notable example of how circumstances alter cases, and it is additional argument for Mr. McGregor in his contention for a central power station or stations and electrical distribution.

The modern locomotive has, we believe, nearly reached its maximum of power and weight. It has increased in height and width almost to the limit, and only in length is further increase possible, hence the great increase in this element, and in order to overcome the difficulties of running the long machines over crooked track, the ingenious but somewhat clumsy devices in articulated boilers and swivelling trucks and universal joints in steam pipe connections have been introduced. These great machines, with their high centres of gravity, are so hard on the track that they are the principal if not the only reason for the enormous expenditures for heavy rails, larger and more numerous ties, increased quantities of ballast, and lastly, for increased cost of maintenance of way and structures, and all this, or nearly all, be it remembered, is to avoid the necessity for the extra locomotive crew and attendance which the use of two locomotives instead of one would necessitate. The big articulated or Mallet locomotives are merely devices for putting two locomotives under the control of one man and here is perhaps the strongest argument for electrical power, that two or more power units can be coupled together in an absolutely flexible train and supported on as many wheels as may be necessary to reduce the axle load to that of the standard box or pullman car and still be under the absolute control of one intelligence. Another is the question of endurance mentioned above. The electric motor does not get tired and can exercise her maximum pull as well at the top of a long grade as at the bottom, and [illegible] as she can get the "juice" freely, almost as well at a speed of 20 miles [illegible] 10. Again the question of radiation of boilers and condensation of steam does not come into anything like the same extent only that of capital cost is opposed to the change, and while the modern locomotive is one of the most wonderful of machines in its flexibility and its independence of outside agencies, it would seem as if the time had almost come when it would be debased to such purposes as switching in yards, and hauling over temporary branch roads where the traffic is light and infrequent and cannot pay interest on the increased capital charge. Particularly is the prospect of change attractive in districts especially numerous in Canada where water power can be substituted for steam, or even where the latter can be used merely intermittently or as an auxiliary in times of drought to the enormous saving in our coal bills. There are other reasons for the change, the superior cleanliness and the fact that the electric motor is essentially a rotary engine, while the steam locomotive, as we know, is as essentially a reciprocating one, and not so well adapted to high speeds, but these are passenger service considerations and hardly come within the scope of Mr. McGregor's article. Certain it seems that many of our trunk roads or portions of them would be glad to try the change if it were not for the enormous capital amounts they have invested in steam locomotives and their accessories, engine houses, repair shops, water supplies, etc., and the temporary disorganization which the change would effect. But all this has little effect on the question of ruling gradients unless it is to emphasize the advantage of flattening them as much as possible. The time was when it was believed that the wheels of an electric locomotive gripped the rail better than those of the steam locomotive, when it was argued that because an electric locomotive could negotiate a grade of 10% it was not economy to spend money to secure a lower standard, but these times have gone by and the change to electricity, whether imminent or not, will not to any great extent affect the principles of railway location as they were laid down 20 years ago by A. M. Wellington, and as they are accepted with more or less modification and reservation, due to the greater flood of experimental light which has been thrown upon them at the present day.

"News" for J. E. Dalrymple.

A "technical" paper, published in Toronto had the following in a recent issue:—

"J. E. Dalrymple, one of the vice presidents of the Grand Trunk Railway, and head of the traffic department at Montreal, has left the service of the G.T.R. to become vice president of the Northern Navigation Co., to which position he has been chosen. Mr. Dalrymple will still have his offices in Montreal."

The idea of Mr. Dalrymple relinquishing the high salaried position of Vice President of the G.T.R. and G.T.P.R. to accept that of a director, to which no salary is attached, of the Northern Navigation Co., a subsidiary of the Canada Transportation Lines, Limited, is rich. The facts were given in Canadian Railway and Marine World for September as follows:—

"J. E. Dalrymple, Vice President (Traffic), G.T.R., and G.T. Pacific Ry., has been elected a director of the Northern Navigation Co., as representing the G.T.R. interests, vice W. E. Davis, deceased.

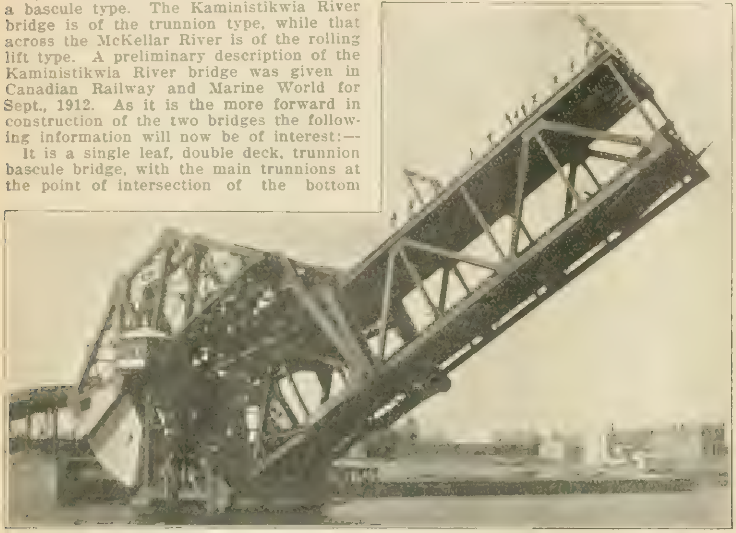
Canadian Pacific Railway Bascule Bridge Over Kaministikwia River.

The C.P.R. is building extensive terminal yards and loading docks on Island no. 1 at Fort William, Ont. In order to reach this island it was necessary to build bridges across the Kaministikwia and McKellar Rivers. Inasmuch as these are both navigable rivers, movable bridges were required, and on account of the rivers being so narrow, it became necessary to use bridges of a bascule type. The Kaministikwia River bridge is of the trunnion type, while that across the McKellar River is of the rolling lift type. A preliminary description of the Kaministikwia River bridge was given in Canadian Railway and Marine World for Sept., 1912. As it is the more forward in construction of the two bridges the following information will now be of interest:—

It is a single leaf, double deck, trunnion bascule bridge, with the main trunnions at the point of intersection of the bottom chord, and the end post of the truss (heel trunnion type), and embraces a 186 ft. movable span, giving a clear channel in the river of 180 ft. and a 40 ft. stationary span or tower. The lower deck carries a double track railway, and the upper deck a 30 ft. roadway, on which are two electric railway tracks. The counterweights are separately mounted on trunnions supported at the top of the tower, and the counterweight trusses, which carry part of the highway floor, are connected to the moving leaf through the counterweight links, which are pin connected both to the counterweight trusses and the bascule trusses. There are long approach viaducts on both sides of the river for the electric railway, to enable it to cross the bridge on the upper deck.

The bridge was erected in the open position by means of an erection tower such as is ordinarily used in erecting this kind of a bridge. The placing of the concrete for the counterweight was carried on simultaneously with the erection of the steel, so as to balance the structure at all times. On account of the size of the structure, the available space for the concrete was small, and it was necessary to make concrete weighing as much per cubic foot as was possible. Iron ore was used in place of stone for this reason, and concrete was obtained weighing about 175 lbs. a cubic foot. This concrete has such great tensile strength that most of the reinforcing ordinarily used in these counterweights was omitted. There was occasion to remove some of this concrete afterward, and it was found to be so tough that the only way it [illegible]

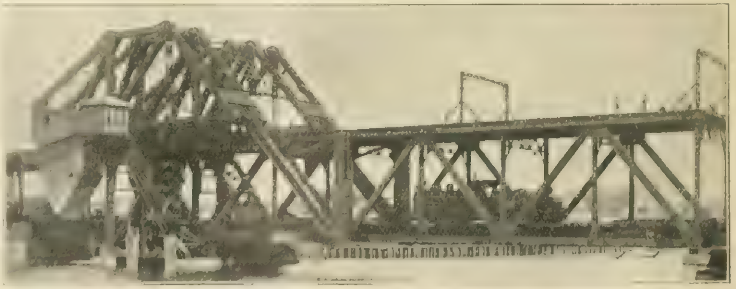
The bridge is operated by electricity obtained from the Kaministikwia Power Co. It has two 85 h.p. motors for raising and lowering, and it is interlocked in such a way that every operation must be performed in sequence, and unless the bridge is actually moving up or down, it is held rigidly in position by a brake operated by an independent 5 h.p. motor.



Kaministikwia River Bridge, Being Opened.

The total weight of steel in the bridge, exclusive of the approaches, is about 2,500 tons. The counterweight weighs about 2,400 tons.

The bridge was designed under the direction of P. B. Motley, M. Can. Soc. C.E., Engineer of Bridges, C.P.R. It was fabricated in the Canada Foundry Co.'s Davenport works, Toronto, and all calculations in regard to counterweight were worked out in that company's engineering department after the shop drawings were made.



Kaministikwia River Bridge, Closed.

It is said to be the largest double track, double deck bascule bridge in the world.

The Great North Western Telegraph Co. has closed its offices at Crystal Beach, Hastings, Rosseau, Royal Muskoka Hotel, Ont., and Little Metis, Que.

Canadian Northern Railway Earnings, Etc.

Gross earnings, working expenses, net earnings, increases, or decreases, compared with those for [illegible], from July 1, 1913:

	Gross Earnings	Expenses	Net Earnings	Increase
July	$1,928,800	$1,414,500	$514,300	$19,700
Aug.	1,824,800	1,416,200	408,600	37,800
	$3,753,600	$2,830,700	$922,900	$57,500
Inc.	$ 178,100	$ 120,600	$ 57,500	

The mileage under operation in Aug. 1 was 4,316, against [illegible] in Aug., 1911.

Canadian Pacific Railway Earnings, Etc.

Gross earnings, working expenses, net earnings, increases, or decreases, compared with those for [illegible], from July 1, 1913:

	Gross Earnings	Expenses	Net Earnings	Decrease
July	$11,[illegible]	$7,[illegible]	$4,116,793 18	$331,383 72
	$11,[illegible]	$7,[illegible]	$4,116,793 18	$331,383 72
Incr.		$ 27[illegible]047 41		
Decr.	$ [illegible]		$ 331,383 72	

Approximate earnings for August, $11,[illegible], against $[illegible] for August, 1912.

Commencing August, the mileage under operation was increased to 11,[illegible].

Grand Trunk Railway Earnings, Etc.

The following figures show the earnings and expenses of the G.T.R., C.A.R., G.T. Western Ry. and D.G.H. & M.R. for July:

Grand Trunk Railway

Earnings	[illegible]
Expenses	[illegible]
Net earnings	[illegible]

Canada Atlantic Railway.

Earnings	[illegible]
Expenses	[illegible]
Deficit	[illegible]

Grand Trunk Western Railway.

Earnings	[illegible]
Expenses	[illegible]
Net earnings	[illegible]

Detroit, Grand Haven and Milwaukee Ry.

Earnings	[illegible]
Expenses	[illegible]
Net earnings	[illegible]

TRAFFIC RECEIPTS OF THE SYSTEM

Aggregate from July 1 to Aug. 31

	1913	1912	Increase
G.T.R.	$[illegible]	$7[illegible]	$41[illegible]
C.A.R.	448,308	402,272	46,036
G.T.W.R.	1,263,935	1,168,503	95,432
D.G.H. & M.R.	[illegible]	[illegible]	[illegible]
Totals	$1[illegible]	$[illegible]	$[illegible]

Grand Trunk Pacific Railway Earnings.

[illegible] Pacific [illegible] and Lake [illegible] for August, [illegible], and [illegible]

A fire which broke out in the residence of PATRICK DUBEE, Secretary-Treasurer, Montreal Tramways Co., and President, Canadian Electric Railway Association, on Arlington Ave., Montreal, on the evening of Sept. 24, damaged the house and contents several thousand dollars.

Railway Development

Projected Lines, Surveys, Construction, Betterments, Etc.

Alberta and Great Waterways Ry.—It is reported from Edmonton, Alta., that among the measures to be submitted to the Alberta Legislature which opened Sept. 16, will be one providing for the building of this projected railway from Edmonton to McMurray, 230 miles, as a government work.

Algoma Eastern Ry.—The section of the line to Goat Island was opened for traffic, Sept. 15. The road is now being operated from Sudbury to Goat Island, at which point a round house and machine shop has been built. A bridge is under construction to connect Goat Island with Little Current, on Manitoulin Island, which it is expected to have ready for traffic Nov. 1. The passenger station and freight sheds will be located at Little Current. (Aug., pg. 376.)

See complete descriptive article on pg. 457 of this issue.

Delaware and Hudson Co.—The Board of Railway Commissioners has authorized the Quebec, Montreal and Southern Ry.,—the D. & H. Co.'s railway in Canada—to operate trains over the bridge across the St. Francois River, between St. Francois du Lac and Pierreville, Que. (Oct., 1912, pg. 501.)

Dominion Atlantic Ry.—The Board of Railway Commissioners has approved of a revised location for the North Mountain Branch between Grafton and Torn Lane, Cornwallis tp., N.S. (Sept., pg. 432.)

Edmonton, Dunvegan and British Columbia Ry.—J. D. McArthur, President, is reported to have stated in an interview Sept. 4, that track had been laid from Edmonton, Alta., northerly for 100 miles, and it was expected to reach the site of the bridge across the Athabasca River at Mirror Landing, mileage 130, before suspending work for the season. Ballasting gangs are following up the track layers, and it was hoped to have the line open to Mirror Landing before the end of the year. Grading and other work beyond the river was being proceeded with, and the bridge across the river was being built. (April, pg. 168.)

Essex Terminal Ry.—Surveys are reported to have been completed for the extension of the line from Sandwich to the site of the new steel plant at Ojibway, Ont., about three miles. The right of way has been secured, and the Board of Railway Commissioners has authorized the building of the extension at grade across several highways. It is expected that construction will be started at once. (April, pg. 168.)

Hudson Bay, Peace River and Pacific Ry.—At the annual meeting in Winnipeg, Sept. 10, the following were elected directors for the current year: R. M. Simpson, D. E. Sprague, D. C. Cameron, F. W. Drewry, F. W. Henbach, R. C. McDonald, R. D. Waugh, W. S. Evans, C. Midwinter. (Mar., 1912, pg. 120.)

Intercolonial Ry.—Tenders are under consideration for the erection of a brick and stone passenger station at Sussex, N.B.; and for the erection of a mechanical coal handling plant at Drummondville, Que.

Tenders are also under consideration for the building of a diversion between Nelson and Derby Jct., and for the building of a second track from St. Romuald to Chaudiere Curve, Que. F. P. Gutelius General Manager, is reported to have stated in Montreal, Sept. 15, that the contract for the latter work had been let to Soper and McDougall. The work to be done covers the construction of a second track from station 173+18 at St. Romuald to station 371+48 at Chaudiere Curve, 3.75 miles, with such sidings as may be directed. The contractor is to do all the excavating and grading, to extend or build new culverts and bridge masonry, construct protection walls and retaining walls, protect embankments with rip-rap, etc. The work is to be completed by July 1, 1914.

The revision of gradients on the Cape Breton section, Mr. Gutelius stated, Sept. 15, would be put under contract as soon as Parliament sanctioned the expenditure. It is intended to undertake the revision of gradients on the whole line.

New station buildings are being erected at Truro, N.S., and Bathurst, N.B. It is also proposed to overhaul many of the other station buildings.

Intercolonial Ry.—J. S. O. Dwyer, M. Can. Soc. C. E., who is in charge of the grade revision surveys in Cape Breton, has obtained a 0.6% gradient compensated for curvature in both directions, east and west from Point Tupper to Grand Narrows, 46.2 miles. The surveys will be continued to Sydney, 45.3 miles farther and it is expected to obtain the same gradient throughout.

Kettle Valley Lines.—We are officially advised that the contract for the line through Coquihalla Canyon to Hope, B.C., 38 miles, has been let to McArthur Brothers Co., New York, who have established headquarters at Hope, B.C., where F. C. Hitchcock, Vice President and General Manager, is now located. The work is very heavy rock and tunnel in a very inaccessible canyon, and extends from the summit of the Coquihalla near Merritt to Hope, where connection will be made with the Canadian Northern Pacific Ry., and by a bridge across the Fraser River with the C.P.R. The contractors made a start on the work at Hope on Aug. 27, C. C. Tinkler and H. A. McClure being in charge for the contractors. The work is being sublet in short sections. A wagon road is being built along the canyon, from the Hope end, as far as possible to facilitate the getting in of supplies. This road will be about 16 miles long and is estimated to cost $200,000. In addition to the heavy rock cutting there will be 12 tunnels on the 38 miles. The contract calls for the completion of the work by Nov. 1, 1914.

The company's engineers started work Aug. 26, making soundings on the Fraser River at Hope to secure a location for the bridge to be built to give connection with the C.P.R.

At Penticton, a large yard is being laid out, and a locomotive house and other buildings are being erected. The locomotive house is 90 ft. by 160 ft. and will accommodate six locomotives. The boiler house and machine shop is 100 ft. by 48 ft. (Sept., pg. 432.)

Lake Erie and Northern Ry.—Track laying is being proceeded with from Galt towards Brantford, Ont., on this line, and ballasting is in progress. Grading has so far progressed that it is not expected there will be any delay in the work of track laying into Brantford. It is expected to have this part of the line completed by Oct. 30. About 10 miles of grading have been completed between Bratnford and Port Dover, and it is expected to finish up the remaining 20 miles by Dec. 31. The whole 53 miles from Galt to Port Dover is expected to be in operation June 1, 1914. The question of the terminal site in Port Dover has not been settled.

Arrangements are being made with the Hydro Electric Commission by [illegible] the [illegible] power line from the [illegible] sub-station into Brantford will be erected along the company's right of way. (Sept., pg. 432.)

London and Port Stanley Ry.—It is said that the ratepayers of London will be asked to vote on Oct. 15 on a by-law providing for the electrification of that line, from London to Port Stanley, Ont. (Sept., pg. 432.)

London to Port Talbot.—London, Ont., press reports state that surveys have been made by S. Wilson for a railway from London to Port Talbot, Ont.

C. M. Stewart, President of the Canadian Stewart Co., and of James Stewart and Co., New York, was in London, Sept. 17, looking over the suggested routes for the entrance of this projected railway into the city. He is reported to have stated that his company is looking for a route which will give a one-half per cent. gradient from Lake Erie to London; the company would provide its own terminal facilities, and build its own line independent of any existing line, and would not seek any bonus; it will be a steam railway exclusively. The lake terminal has not been selected, and everything will depend on the result of the surveys.

New Brunswick and Prince Edward Island Ry.—A new bridge is being placed over the river at Port Elgin, N.B., work being started Sept. 8. The construction is being done by an Intercolonial Ry. gang. (Aug., 1911, pg. 733.)

North Ry.—Press reports state that about 200 miles of the surveys for the building of this projected railway from near Montreal to the National Transcontinental Ry. at Bell River, Que., have been completed, and that the engineers expected to have their field work finished by Sept. 30. The Laurentides will be crossed at a low elevation, and from 25 miles beyond the Gatineau River, the line will run through a comparatively level country for about 150 miles right to Bell River. It is further stated that a contract for the building of the line will be let shortly. (July, pg. 332.)

Northern Pacific Ry.—G. T. Reid, Assistant to the President, is reported to have stated in an interview Sept. 3, that the revision of the line between Seattle and Sumas, Wash., via Snohomish, will not be completed until the spring of 1914. Connection will be made with the Great Northern Ry. at Huntingdon near Sumas and the G.N. Ry. will be used into Vancouver. An agreement is being negotiated with the British Columbia Government for the use of the bridge over the Fraser River at New Westminster. The terminals which the G.N. Ry. is laying out at False Creek, Vancouver, into which the N.P. Ry. trains will run, are expected to be ready in the summer of 1914. (July, pg. 332.)

Pacific Great Eastern Ry.—A. E. Kellett, Superintendent of Construction, reported to the North Vancouver Council, Sept. 6, that it was expected to have the line as far as Dundarane ready for operation by Jan. 1, 1914. This is part of the section of the line from North Vancouver to Newport, on Howe Sound.

Plans have been deposited with the Minister of Public Works at Ottawa, for a wharf and tramway, with trestle approach, at the head of Howe Sound, B.C., in front of D.L. 486, G.I., N.W.D. (Sept., pg. 432.)

Prince Edward Island Ry.—Work has been started on the car ferry terminals at Carleton Point, P.E.I., and at Cape Tormentine, N.B. ——— Fripp is engineer in charge for the Dominion Government. (Sept., pg. 433.)

Quebec Rapid Transit Co.—Unconfirmed press reports state that work will be started in the spring of 1914 on the construction of the projected line to connect Quebec, Charlesbourg, Loretteville, Cap Rouge, Ste. Foye and the Isle of Orleans. A. Taschereau, Quebec, is interested. (Jan., pg. 21.)

St. John and Quebec Ry.—A contract has been entered into between the Dominion Government and the company under the act granting aid to certain railways for the building of the line between Andover and St. John, N.B., 200 miles. This subsidy is in lieu of that granted in 1912, and does not include the building of two bridges, one across the St. John River, and the other across the Kennebecasis River.

Steel is reported to have been laid on about 25 miles between Fredericton and Rothesay, and press reports state that J. H. Corbett and Sons (Inc.), the contractors for the section to Gagetown, have been given a contract for grading the line southerly from Gagetown. The location plans of the route from Centreville northerly to Andover, have not been finally approved by the Government, but press reports state that a contract for the grading of this section has been let to McFarlane and McDonald. (Sept., pg. 433.)

Toronto, Hamilton and Buffalo Ry.—F. L. Somerville, consulting engineer, Toronto, has submitted to the Hamilton City Council a plan for the betterment of the railway entrances into the city, for use in connection with the city's application to the Board of Railway Commissioners for an order directing the T.H. and B. Ry. to abandon its present line on Hunter St. The details of the plan have not been given out, but it is stated that the estimated cost of the new route would be a little over $1,000,000. The object of the city is to have all the steam railways centralized in what is known as the Stuart St. cut. (Aug., pg. 377.)

Vancouver Island-Mainland Bridge.—At a public dinner in Victoria, B.C., recently, the Dominion Minister of Public Works stated that he was looking for an engineer to undertake the work of investigating the conditions of Seymour Narrows, with a view of constructing a railway bridge there. Seymour Narrows is the stretch of water separating the northern end of Vancouver Island from the mainland. In the original survey for what is now the C.P.R., it was marked out as a suitable place for the erection of a bridge. Several projects have been initiated since for the erection of such a structure, but nothing has come of them. (Feb., pg. 84.)

Western Dominion Ry.—Press reports state that work is to be started at an early date on the construction of this line. The projected route is from the International boundary north of Grand Falls, Mont., westerly to the Crowsnest country, tapping the coal fields, thence northely to Calgary, Alta., and then on to the Peace River country. (July, pg. 330.)

Winnipeg, Man.—The Winnipeg, Man., City Council, Sept. 8, passed a bylaw providing for the provision of a water supply for the city from Shoal Lake at a cost of $13,500.000. The report of the engineers on which the estimated cost is based contains the following:—"It will be advisable to provide a standard gauge construction railway from the point where the aqueduct leaves the Grand Trunk Pacific Ry. to Indian Bay, and our estimate includes $1,020,000 which is substantially $12,000 a mile, for the building of such railway. We have also made estimates of the cost of equipping and operating the railway, but instead of stating the sums so estimated separately they have been incorporated into the estimates of the concrete and other items of work."

Traffic Orders by the Board of Railway Commissioners.

The dates given for orders are those on which the hearings took place, and not those on which the orders were issued:—

Classification of Dried Fruit.

20010. Aug. 11.—Re application of Toronto Board of Trade, under sec. 321 of the Railway Act, for a reduction of the freight classification ratings on dried fruit. It is ordered that the application be not granted.

Esquimalt & Nanaimo Ry. Freight Tariff.

20028. Aug. 13.—Re application of Esquimalt and Nanaimo Railway for an order further extending time within which it may be permitted to file a revised Standard Freight Tariff for approval. It is ordered that the time within which the company was required to file the said tariff be further extended for six months from date of this order.

Freight Rates on A.R. & I. Co.'s Railway.

20043. Aug. 12.—Re application of the Board of Trade of Lethbridge, Alta., complaining against the cancellation of Great Northern Ry. tariff, C.R.C. no. 720, applying between stations on various lines in Eastern Canada and stations on the Alberta Ry. & Irrigation Co.'s railway, now known as the Coutts and Cardston subdivision of the C.P.R., and the notice by the Board calling upon the railway companies interested to show cause why the said tariff should not be reinstated since it has neither been superseded nor disallowed by the Board, as provided under sec, 338 of the Railway Act. It is ordered that the application be not granted.

Coal Rate from Port Burwell to Lambton.

20047. Aug. 8.—Re complaint of Interurban Electric Co., of Toronto, that while the C.P.R. charges 60 cents a ton on coal from Port Burwell to Toronto, West Toronto, and North Toronto, and is a party to the same rate from the Niagara frontier, 75c. is charged for the intermediate haul to Lambton, discriminating, therefore, against Lambton and in favor of the points named. It is ordered that the C.P.R. reduce its rate on coal from Port Burwell to Lambton and Islington from 75c to 70 cents per ton; the reduced rate to become effective not later than Sept., 1913.

Switching at Casselman, Ont.

20056. Aug. 12.—Re application of A. Pilon of Casselman, Ont., for an order rescinding order 5390, Aug. 15, 1908, declaring $3 a car to be made by the G.T.R. over and above the company's station rate on brick to be a reasonable charge for the additional service of switching and handling the traffic from the applicant's siding, about 2½ miles west of Casselman Station. It is ordered that 5390 be rescinded.

Cream Rates from British Columbia.

20074. Aug. 12.—Re application of the Shippers' Section of the Winnipeg Board of Trade for an order extending the application of the cream rates, approved by order 17384, Sept. 4, 1912, to permit of shipments of cream from Hubbard, Ituna, Kelliher, Punnichy, Quinton, and Raymore stations, to Winnipeg, on the same scale as approved under the order; and the notice calling upon the express companies to show cause why, in view of the Board's judgment of Oct. 27, 1911, the mileage covered should not be increased to 400 miles. Upon it appearing that the extension of the mileage to 400 miles will remove the discrimination complained of as between Ituna and Goodeve, it is ordered that order 17384 be amended to provide charges for cream up to 400 miles, as follows:

Miles.	Five-gallon cans, each	Eight-gallon cans, each	Ten-gallon cans, each
[illegible]	[illegible] cents	91 cents	96 cents
400	79 cents	101 cents	106 cents

The amended tariff to be made effective not later than Sept. 18,

Milling Corn in Transit.

20106. Aug 15.—Re application of Empire Flour Mills, Ltd., of St. Thomas, Ont., for an order restoring the milling-in-transit arrangement on United States corn, the product of which is shipped from St. Thomas to points on or via the G.T.R. and the C.P.R. It is ordered that the application be dismissed.

Rates on Sugar from Wallaceburg.

20136. Aug. 11.—Re application of Dominion Sugar for a readjustment of the rates on sugar, in carload quantities, from Wallaceburg to Toronto and from Wallaceburg to Hamilton, over the C.P.R., G.T.R., Pere Marquette, and Chatham, Wallaceburg and Lake Erie Railways. It is ordered that the said application be not granted.

Rates on Grain and Grain Products.

General order 109. Aug. 27.—Re complaint of Dominion Millers' Association and the Campbell Milling Co. against the proposed increase in less than carload mileage rates on grain and grain products, published in tariffs of the railway companies, to take effect Sept. 1, It is ordered that the mileage rates on less than carload shipments of grain and grain products, as published in the following schedules, be suspended until further order of the Board, namely:—

Supplement no.	to C.R.C. no.	Railway Company.
10	E-2566........	Grand Trunk
11	E-2385........	Canadian Pacific
1	E-176........	Canadian Northern (Eastern Lines)
2	E-145........	Canadian Northern (Eastern Lines)
1	E-232........	Canadian Northern (Eastern Lines)
1	2022........	Michigan Central
3	1910........	Michigan Central
8	245........	Chatham, Wallaceburg & Lake Erie
3	242........	Chatham, Wallaceburg & Lake Erie
3	115........	Essex Terminal
4	254........	Galt, Preston and Hespeler
2	80........	Schomberg & Aurora
	951........	Ottawa & New York
3	1468........	Pere Marquette
1	218........	Thousand Islands
5	565........	Toronto, Hamilton & Buffalo
3	627........	Wabash
3	102........	Windsor, Essex & Lake Shore

The railway companies were subsequently notified that at the Board's sitting in Ottawa Sept. 16 they would be required to justify the proposed increases in rates referred to in this order.

Lumber Rates for British Columbia.

20245. Aug. 30.—Re Supplement 17 to Tariff C.R.C. no. W1615, filed by the C.P.R., and effective Sept. 3, increasing rate on lumber, shingles, and other articles taking lumber rates, from British Columbia coast and interior mills to points on its Sault Ste. Marie Division. Upon the failure of the railway company to justify the proposed increases to the Board's satisfaction, and in view of the Board's ruling that no increases should be made by railway companies, unless reasons therefor satisfactory to the Board were given, pending the decision in the Western Rates Case, it is ordered that the effective date of the advanced rates in the said supplement be suspended for 30 days from the date of this order; and that the railway company be required to show cause at the sittings of the Board to be held in Ottawa on Sept. 16, why the said increased rates should not be disallowed.

Rattan Furniture Rates from British Columbia.

20246. Aug. 30.—Re Supplement no. 24 to Tariff C.R.C. no. W1713, filed by the

C.P.R., and effective Sept. 7, increasing rates on rattan furniture from Vancouver and Victoria to points in Manitoba, Ontario and Quebec.

The order in this case is precisely similar to order 20245 above.

Coal Rates to Lambton, Ont.

20329. Sept. 13.—Re complaint of Interurban Electric Co., Toronto, that on coal via Port Burwell and from the Niagara frontier it is charged 15c. a ton more to its unloading siding in the proximity of the C.P.R.'s Lambton station, than is charged to Toronto, West Toronto and North Toronto, to which the said siding is intermediate; and that the said excess charge constitutes an unjust discrimination: it is ordered that the Michigan Central Rd., the Toronto, Hamilton and Buffalo Ry., and the C.P.R. jointly be required to reduce their rate on coal, in carloads, from Suspension Bridge, New York, Black Rock, New York, and Buffalo, N.Y., to Islington and Lambton, Ont., from 75c. to 70c. per ton of 2,000 lbs., the said reduced rate to become effective not later than Oct. 27, and it is further ordered that order 20047, Aug. 8, made herein, be rescinded.

Carrying Trunks by Freight.

General order 110. Aug. 21.—Re application of R. DeB. Hovell, of Victoria, B.C., for an order directing railway companies to carry as freight passengers 1st class baggage; and the matter of the notice calling upon the railway companies to show cause why trunks containing wearing apparel and personal effects should not be accepted for carriage by freight service, when securely corded. It is ordered that railway companies be required to accept and carry by freight, trunks containing wearing apparel and personal effects, when securely corded.

Express Rates on Cream.

General order 111. Aug. 20, as amended by general order 112, Sept. 18.—Re application of H. W. Riley, of Calgary, Alta., for a reconsideration of order 17384, Sept. 4, 1912, as amended by order 17492,, Sept. 14, 1912, prescribing express rates on cream and terms and conditions of service in connection therewith, it is ordered: 1. That the application to amend order 17384, in so far as it affects the rate basis, be refused. 2. That the present tariff rates be reduced by 5c. a can by making them exclusive of delivery, and the following rules be substituted for those included in the tariff prescribed by order 17384: (1) Returned empty cans, which were carried full by this company under this tariff, will be charged at the rate of 5c. each to the original point of shipment. (2) The rates shown herein include the collection of full or empty cans at points where the company furnishes a waggon service, but do not include delivery. (3) The consignee may give the company's local agent a written general or continuing notice that until such notice is withdrawn (which shall not be within one month from the date thereof), he desires all his cream delivered by the company's waggons; and on receipt of such notice, and until its withdrawal, the company will furnish the service at an additional charge of 5c. per can. Note—Agent will preserve such notices in his possession for reference, and, if withdrawn, for at least one year thereafter. (4) No reduction from these rates will be made for smaller or partially filled cans. (5) Two 5-gallon cans will not be carried at the rate for a 10-gallon can. (6) Between common points where a competing company may have a shorter line, this company's rates will be based upon the shorter distance.

The East Coast Transport Co. is reported to have been formed for the purpose of operating a gasoline vessel between Victoria and Nanaimo, in the freight traffic.

Railway Finance, Meetings, Etc.

The Buffalo and Lake Huron Ry. Co.'s annual meeting was held at Liverpool, Eng., Sept. 3. The report for the half year ended June 30 states that after providing for the interest on the 1st and 2nd mortgage bonds the available balance, as shown by the revenue account, including the amount brought in from the previous half year, is £15,118 7s. 1d., out of which the directors recommend the usual dividend of 5s. 3d. a share, amounting to £13,784 13s. 3d., leaving a balance of £1,333 13s. 10d. to be carried forward. The company's line is leased to the G.T.R.

Central Ry. of Canada.—A London, Eng., cable Sept. 8, stated that the delay which has arisen in the payment of the coupons due in July on the company's bonds, payable in Paris, France, is owing to the voluntary liquidation of La Banque Alsacienne de Paris, but that arrangement had been made for the payment of the coupons Sept. 15.

Elgin and Havelock Ry.—Following are the officers and directors for the current year:—President, R. E. Harris; Secretary-Treasurer, F. H. Oxley; other director, C. H. Cahan.

Grand Trunk Pacific Ry.—A certified copy of bylaw 13, providing for the issue of $15,000,000 of debentures, authorized by the G.T.P. Loan Act, 1913, was deposited with the Secretary of State at Ottawa, Aug. 2[illegible]

Great Northern Mining and Ry. Co.—A meeting of subscribers was held at Eastern Harbor, N.S., Sept. 5, to approve a contract entered into with Jas. Brodie, Westmount, Que., by the directors, for the transfer to him of all the property and the entire undertaking of the company. A further meeting of shareholders was held Sept. 19, for the purpose of confirming the resolutions passed Sept. 5. The company owns coal mining properties in Inverness County, N.S., and has a charter to build a railway to connect these with a shipping port at Eastern Harbor. No railway construction has been done. The officers of the company are:—President, P. J. L. Fiset; Secretary, P. LeClerc.

Kettle Valley Ry.—A lease dated June 2, of the K.V. Ry. to the C.P.R. Co. has been deposited in the office of the Secretary of State at Ottawa. The K.V. Ry. extends from the International Boundary to Grand Forks, B.C., and is under construction from Grand Forks to the Fraser River at Hope, where a connection will be made with the C.P.R. main line. It also owns a line in the U.S., from the International Boundary to Republic, Wash., and a charter for the building of a line thence to Seattle, Wash.

Kettle Valley Ry.—The Board of Railway Commissioners has recommended the Governor in Council to sanction the proposal to lease the K.V.R. lines to the Canadian Pacific Ry. Co.

Klondike Mines Ry.—Following are the officers and directors for the current year,—President, H. B. McGiverin; Vice President, J. P. Ebbs; Secretary, A. Haydon; other directors, John Latta and C. G. Kekewich.

Mineral Range Rd.—The authority of the Michigan State Railroad Commission has been granted for the issue of notes for $115,000.

New York Central and Hudson River Rd.—A copy of an agreement supplemental to that made Nov. 23, 1912, and dated June 5, 1913, between the Guaranty Trust Co. and the N.Y.C. and H.R. Rd. Co. was deposited with the Secretary of State at Ottawa, Aug. 9. The agreement affects the Canada Southern Ry., the Ottawa and New York Ry., and the other lines in Canada in which the N.Y.C. and H.R. Rd. [illegible]

Quebec and Saguenay Ry.—[illegible] O'Brien, contractor, for $[illegible] [illegible] will come before the courts at the [illegible] sittings.

Thousand Islands Ry.—The annual meeting was held at [illegible], Ont., Sept. [illegible] Following are the officers and directors for the current year:—President, [illegible] W. Rathbun, Deseronto, Ont.; Secretary and Treasurer, H. W. Cooper, Gananoque, Ont.; Manager, [illegible] other directors, [illegible] and S. E. [illegible], M.P., [illegible]

Wabash Rd.—The Receivers have been [illegible] permission to sell $[illegible] certificates for the purpose of taking up the amount of [illegible] maturing Aug. 1. Default was made Aug. 1 in payment of interest on the [illegible] which were made [illegible] which matured Aug. 1, 1911, and which have been extended several times. Interest was last paid on Feb. 1, but the local court is reported to have ordered that the payment which was due Aug. 1 be not made.

Winnipeg and Northern Ry.—Notice has been formally given that the amalgamation of the W. and N. Ry. Co. with the Canadian Northern Ry. Co. has been completed.

Safety First on the Grand Trunk Railway.

Howard G. Kelley, Vice President, has issued the following circular: "Geo. Bradshaw, Safety Engineer, has been engaged to put into effect on this system an organization for the prevention of injuries and damage to property, familiarly known as a safety first" organization. He will inspect the lines, terminals and shops and confer with officers of the various departments on matters pertaining to safety in their jurisdictions and as to the particular plan of organization best adapted to this system. From the information so obtained he will submit a report embodying recommendations which will be followed by a circular for general distribution explaining in detail the plan decided upon and methods of procedure. He will also deliver at all important centres illustrated lectures on safety, showing and explaining in a vivid and impressive manner unsafe conditions and practices responsible for injuries and how to correct or avoid them. Notice of the time and place of these lectures will be given and it is desired that every employe on the system, whose duties permit, shall attend. No employe who considers the importance of his own personal safety can afford to miss the opportunity which these lectures will afford to learn something of real practical value for the protection of his life and limb. We hope to reduce the personal injury record to the lowest possible point and to make our system the safest in the country to work for and to patronize. To accomplish this end every officer, agent and employe is requested to give his earnest and active support and co-operation in the inauguration and prosecution of this campaign for greater safety."

The American Association of Passenger Agents held its annual convention at St. Paul, Minn., Sept. 8 and 9. The chief subjects discussed, were, the field man, and how to increase our efficiency to the public and our employers. After the close of the convention, those present were taken on a trip through the Yellowstone Park, by special train to Gardiner, Mont., and thence by stage, as guests of the Northern Pacific Ry. San Francisco was decided on for the 1914 meeting.

Canadian Northern Railway Construction, Betterments, Etc.

Canadian Northern Ontario Ry.—We are officially advised that on Sept. 9, there still remained about four miles of track to lay, and about 60% of the ballasting to be done on the uncompleted portion of the line between Toronto and Ottawa. The erection of station buildings, roundhouses, etc., has been completed. Owing to the uncertainty of the amount of train filling to be done on several sections, we are informed, it is not possible to fix a date for the completion and opening of the line for traffic.

Sir Donald Mann, Vice President, made a trip of inspection over the line from the Ottawa end to Chaffey's Locks, on the Rideau River, Sept. 11. With the exception of about four miles between Chaffey's Locks and Sydenham, on which trouble is being given by some sink holes, the line is completed. Press reports state that the work of filling these is expected to be completed to permit of the operation of trains through from Toronto to Ottawa, by Oct. 15, but Sir Donald Mann, in an interview Sept. 18, is reported as stating that "six months' deferment of the opening of the line to passengers will allow the tracks to settle down."

Montreal-Ottawa-Port Arthur Line.—We were officially advised Sept. 9, that the portion of work on this line at that date was:—Grading, 60% completed; tracklaying, 42% completed; ballasting, 20% completed; erection of buildings, etc., 5% completed. The work on the line will be continued until completion, as everything is in such a shape that work may be continued regardless of the season. These figures refer to the progress of work on the whole of the line between Montreal and Port Arthur, but they do not indicate the state of completion on various sections. The line between Montreal Island and Hawkesbury is practically finished but for the completion of the bridges at the Montreal end; the section between Hawkesbury and Ottawa is in operation, and the mileage between Ottawa and Rideau Junction, the point where the line to Toronto separates, is also completed, but has not yet been opened for traffic. Between Rideau Jct. and Capreol, Ont., the line is under construction, and we were advised Sept. 17, of the following state of construction on this section: Grading from Ottawa to Pembroke, 56% completed; grading from Pembroke to North Bay, 45% completed; grading from North Bay to Capreol, 86% completed. Track has been laid from Capreol, mileage 313 from Ottawa, easterly for 44 miles to mileage 269, from just west of North Bay, mileage 231, for 19 miles to mileage 250, and from just east of North Bay at mileage 227 to mileage 186, in all 104 miles. Track has also been laid from Rideau Jct., six miles, to mileage 12, and one-half mile of track has been laid to the crossing of the C.P.R. at mileage 33 from Ottawa. The bridge work at Chats Falls, and Riviere des Prairies, is well in hand and it is expected that these will be completed this year. It is not expected to have the Ottawa-North Bay section finished until 1915, but it is expected to have the North Bay-Capreol section completed for operation about Aug., 1914. At Capreol, the line joins up with the line originally built from Toronto to Sudbury. Sudbury is now upon a branch, the line having been extended and it is now in operation to Ruel, 55.6 from the point of junction at Capreol. It is 545 miles from Ruel to Port Arthur, and it is expected to have the track laid through between these points early in January.

Canadian Northern Ry.—A new track has been put in operation at Port Arthur, Ont., for the operation of trains from Fort William. The new track begins at the diamond, and skirts the present C.N.R. yards to the station. Heretofore the trains ran over the freight train track.

The Board of Railway Commissioners has authorized the operation of traffic over the connection between the C.N.R. and National Transcontinental Railway at St. Boniface, Man.

The Winnipeg North Eastern Ry. has deposited with the Minister of Public Works at Ottawa plans of the proposed railway bridge over the Red River, from the foot of Clare Ave., Winnipeg, to south of Harrowby Ave., St. Boniface.

Ballasting is being pushed ahead on the Totogan branch, with a view of bringing it up to a higher standard. The branch is being extended and press reports state that some additional track will be laid before the end of the year.

The Board of Railway Commissioners has approved of location of the extension of the Grosse Isle Branch, which now extends to Inwood, Man., from mileage 74.47 to 80.88.

A start has been made at Yorkton, press reports state, on a line from that point to Wroxton, Sask.

The Board of Railway Commissioners has approved of location plans for the extension of the Alsask Branch from mileage 105.42 to 148.54.

It was reported to the Calgary, Alta., City Council, Sept. 12, that the line from Vegreville would be completed into Calgary within 30 days. The steel has been laid to Drumheller, to which place the line is in operation from Vegreville, but the bridges over the Bow and the Elbow rivers have not been completed. These bridges, however, are at Calgary, and all that is delaying the completion of the line is the ballasting. The gravel for this purpose has to be hauled over 130 miles.

Canadian Northern Pacific Ry.—Track has been laid easterly from Port Mann, B.C., 122 miles, a little beyond North Bend. A large steel bridge is under construction at this point over Stroma Creek, which is expected to be completed early in October. Grading is practically completed to Lytton, and work is well forward as far as Kamloops, where a big bridge is being built across the Thompson River, which will take some time to complete. Grading is well advanced north and east of Kamloops, to within about 28 miles of the work in progress from the Yellowhead Pass. Ballasting is being pushed close behind the tracklaying gangs.

Work on the proposed electric line from Kamloops to Vernon is reported to be under way, after having been suspended for some time.

The trestle work in connection with the Lulu Island Branch has been finished and the line is now ready for operation.

Sir William Mackenzie, President, in an interview Sept. 5, is reported as stating that a large portion of the proceeds of the loans recently placed in London, Eng., will be used for western development. The plans include the shops at Port Mann, terminals at Vancouver, Victoria and New Westminster, and the provision of an entrance into Vancouver by a tunnel. These several projects will be gone on with at once, but the company's entrance into Vancouver does not depend upon the building of the tunnel, an arrangement having been made by which the C.N. Ry. will use the Great Northern Ry. lines for the present.

Plans for the reclamation of the False Creek flats are being prepared, and T. G. Holt, Executive Agent, Vancouver, stated Sept. 9, that they would be sent to Toronto shortly for approval.

Vancouver Island Lines.—The contracts for the construction of the line from the Songhees Reserve at Victoria, to Patricia Bay, in the Saanich Peninsula, are reported to have been let to J. Macdonald and the Littleton-Bruce-Elsbach Co. D. D. Lewis, District Engineer, Victoria, is reported as saying, Aug. 30, that the work to be done covers the building of a line from Patricia Bay to the point at which the line to Alberni starts, mileage 4.7 from Victoria, and a line from that point into the Songhees Reserve. The engineering staff then had everything ready to go ahead as soon as the contractors arrived. The work will be rushed ahead as fast as possible.

Grading on the main line from Sooke Lake to mileage 100 is expected to be completed by Nov. 30, and good progress has been made up to mileage 140. The steel superstructure of the bridges over the Cowichan and the Koksilah Rivers is being put up. (Sept., pg. 427.)

Canadian Pacific Railway Company's Annual Report.

In publishing this report in our last issue some errors unfortunately occurred in showing the liabilities in the condensed balance sheet on page 425. The copy was put in the printers' hands correctly and was also put in type correctly, but in putting the type into the form some lines were transposed. The grand total of the liabilities was unaffected, but the totals of the amount due on mortgage bonds, $13,157,520.00, and of the current liabilities, $30,511,302.73, were transposed, and the amounts of the Algoma Branch first mortgage bonds, and current liabilities were repeated, the former incorrectly. The correct arrangement of figures is as follows,—

LIABILITIES

Capital stock		$ 200,000,000.00
Payments on subscription to new issue capital stock (60,000,000.00 at 175) . . .		63,451,667.50
4% preference stock		74,331,339.79
4% consolidated debenture stock		163,257,224.32
Mortgage bonds:		
First Mortgage, 5% .	34,998,633.33	
Less amount redeemed and cancelled....	21,841,113.33	
		13,157,520.00
Algoma Branch, 1st mortgage		3,650,000.00
Current liabilities:		
Audited vouchers .	14,785,322.70	
Pay rolls	6,549,901.24	
Miscellaneous accounts payable	9,176,078.79	
		30,511,302.73
Interest on funded debt and rental of leased lines:		
Coupons due July 1, 1913, and including coupons overdue not presented	1,208,016.17	
Accrued fixed charges	183,785.05	
		1,391,801.22
Equipment obligations ..		880,000.00
Equipment replacement fund...		2,425,426.02
Steamship replacement fund....		5,061,338.29
Appropriation for additions and improvements.. .		17,912,991.41
Reserve fund for contingencies..		3,569,468.37
Lands and town sites sales.....		63,334,285.19
Surplus		77,597,100.36
		$ 720,531,465.20

Alberta and Great Waterways Ry.—An announcement was made in the Alberta Legislature, Sept. 22, by the Premier that a final settlement had been made with the Royal Bank and others interested, in connection with the difference arising out of the proposal to build this railway, and the subsequent cancellation of the contract by the Government. The contract will be taken over by J. D. McArthur, of Winnipeg, and his associates, and the line will be built.

The Canadian Northern Telegraph Co. has opened offices at Inwood, Man., and Dummer and Hearne, Sask.

National Transcontinental Railway Construction.

We are officially advised that a contract has been let to J. Gosselin, Levis, Que., for the erection of machine and other shops for the N.T.R. at St. Malo, Que. The estimated cost of the shops is $1,500,000. A description of the several buildings covered by the contract appeared in Canadian Railway and Marine World for Sept., pg. 409.

The Minister of Railways returned to Ottawa, Sept. 12, from a trip of inspection over the line westerly from Cochrane, Ont. He is reported as saying that while the section of the line from Cochrane to Lake Superior Junction, to which point it is already in operation easterly from Winnipeg, would not be entirely completed until early in 1914, it can be utilized to prevent a grain blockade if one is threatened. A few sink holes are giving trouble and some bridges to replace temporary structures, have yet to be erected. The Minister made the trip to Winnipeg over the line in company with E. J. Chamberlin, President, and other officers of the Grand Trunk Pacific Ry. At Winnipeg, Sept. 4, Mr. Chamberlin said there were yet about 275 miles of the line between Cochrane and Lake Superior Jct. to be completed, so far as ballasting was concerned. (Sept., pg. 430.)

Grand Trunk Pacific Railway Construction.

E. J. Chamberlin, President, returned to Montreal, Sept. 18, after having made a brief inspection over the G. T. P. Ry. He is reported to have said in an interview that he had been 1,200 miles west of Winnipeg, and found construction work progressing very rapidly. It is hoped to have track laid into Fort George about the beginning of 1914, and to tie up with the construction proceeding easterly from Prince Rupert towards the fall.

The Board of Railway Commissioners have authorized the opening for traffic of the line from Tete Jaune, B 17, mileage 1095.3 to mileage 1189. This is at the second crossing of the Fraser River, where a large bridge is being put in.

On the line east from Prince Rupert the Board of Railway Commissioners has approved of revised location plans through Tibbits Indian reserve, mileage 321.6 to 330.1; and from mileage 459.61 into the Fort George Indian reserve at mileage 466.11. The construction is so far advanced that J. W. Stewart, of the contracting firm of Foley, Welsh and Stewart, stated in Victoria, B. C., Sept. 2, that unless something unforseen occurs, he felt safe in saying that all the track between Edmonton and Prince Rupert will be laid by April or May, 1914. He added that his firm has 20,000 men at work on the line in British Columbia.

G. T. Pacific Branch Lines.—It was announced at the G. T. P. Ry. offices in Winnipeg, Sept. 1, that it was expected that physical connection would be made between the company's Regina-Boundary line, and the Great Northern Ry. branch line early in October. This branch extends from Necho, N.D., northerly to the International Boundary.

Starting from Talmage, on the Regina-Boundary Branch, a line is under construction into Weyburn. Grading has been completed, and on the completion of the bridge across the Souris River, track will be laid. Track will only be laid into Weyburn, mileage 14, this year, but the grading has been carried about a mile farther, to a point to which it is said that the line now being built from Harte to Bandon, Man., will be extended at a future date.

The Board of Railway Commissioners has authorized the opening for traffic of the Biggar-Calgary Branch from Dodsland, mileage 48, to Loverna, mileage 104.06. This line will connect with the Tofield-Calgary line, the operation of trains over which, from Beiseker, mileage 163, to mileage 197.7, was authorized by the Board of Railway Commissioners, Sept. 11.

According to a Calgary, Alta., press report, a G. T. P. Ry. engineer stated, Sept. 3, that the company intended to undertake the construction of a line through Moose Jaw, Medicine Hat, and the Crowsnest country into Southern British Columbia, and that the line now being completed from Tofield into Calgary, will be extended south to connect with it. We are officially advised that this construction has not been decided on, and that the building of further lines is not likely to be undertaken until financial matters improve and the freight rate question has been decided. (Sept., pg. 430.)

Dominion Government Railway to Hudson Bay.

J. D. McArthur, general contractor for building the railway from Pas, Man., to Port Nelson, Hudson Bay, is reported to have stated, while in Montreal, Sept. 10, that it is expected to have 50% of the grading and 125 miles of track laid before the end of October. Alex. McMillan, of McMillan Bros., who are carrying out the grading contract, was in Winnipeg, Sept. 10, arranging for the winter supplies for the camps. He says his firm has over 1,000 men at work on the grading. There is a shortage of men at present, but he hoped to be able to get 2,000 men into the camps for the winter. The grading had been completed for the first 185 miles, and the camps are strung out beyond that point. The track laying is being done by the Hudson Bay Construction Co., which has 400 men at work. The material for the building of a wireless telegraph station at Pas has been delivered, and is in course of erection. This station will be used to secure communication with the Government vessels in Hudson Bay, which are engaged in survey work.

The contractors are operating trains over the line, so far as track is laid, and carrying passengers at 5 cents a mile. Track has been laid to McLaren, 62 miles from Pas, at the end of August. (Sept., pg. 422.)

Great Northern Railway Lines in Canada.

Midland Great Northern Ry.—The Manitoba Public Utilities Commission has decided that the company has power to expropriate land for its proposed spur tracks in the vicinity of Ross and Elgin Streets, Winnipeg. The company entered into an agreement with the city to build these spurs, but the owners of the land refused to sell the portion required for the right of way, and argued that the company could not expropriate.

International Boundary to Peace River.—J. A. Carson, of the engineering department of the Great Northern Ry., was in Edmonton, Alta., Aug. 30, and has been spending his time since in investigating the traffic possibilities of the Peace River country. Press reports state that this investigation is being made in connection with a project for building a line from Grand Falls, Mont., the terminal of a G.N.R. branch, north westerly into the Peace River country, for which the G.N.R. is said to hold a charter. (See Western Dominion Ry., in Railway Development Department.)

Vancouver Terminals.—The west pier of the new G.N.R. dock on Burrard Inlet has been completed, and a start has been made on the sheds. The dock is 450 ft. in length and 360 ft. wide, the approaches being 250 ft. long, and 280 ft. wide. About 250,000 cubic yards of material was used for filling. The sheds, which are being built by Grant, Smith and McDonnell, are expected to be completed by Nov. 1.

L. C. Gilman, assistant to the President, G.N.R., is reported as having stated in Vancouver, B.C., Sept. 8, that it is expected to begin operating trains into the new terminals at False Creek in about a year. The Northern Pacific Ry. will use the same terminals. It is not the company's intention to operate a trans Pacific steamship service, as it is purposed to work in connection with existing steamship lines trading to the port.

The reclamation work at False Creek is being pushed forward by the contractors, Grant, Smith and McDonnell. (Sept., pg. 423.)

Annual Inspection of the Canadian Pacific Railway.

Sir Thos. G. Shaughnessy, President, C.P.R., left Montreal, Sept. 3, on his annual trip of inspection over the system, prior to the annual meeting, which takes place early in October.

He was accompanied by several other directors, including R. B. Angus and H. S. Holt, from Montreal; W. D. Matthews and Sir Edmund Osler, from Toronto; and Sir William Whyte, and George Bury, Vice President, from Winnipeg. On account of the illness of Lady Shaughnessy, Sir Thomas returned to Montreal when the party had reached Moose Jaw, Sask.

The rest of the party made a complete tour of the transcontinental line and several branches, and proceeded from Vancouver to Victoria on the s.s. Empress of Asia, the latest addition to the transpacific fleet, arriving on Sept. 10 and leaving on the following day. After inspecting several of the works in progress on the main land, when they were accompanied by R. Marpole, General Executive Assistant; Hayter Reid, Manager in Chief, Hotel Department; F. W. Peters, General Superintendent, Vancouver, and H. W. Brodie, General Passenger Agent, the party left for the east, arriving at Winnipeg, Sept. 15, and Montreal, Sept. 19.

H. Maitland Kersey, the recently appointed Manager in Chief, Transatlantic and Transpacific Steamships, London, Eng., who has been in Vancouver in connection with the arrival of the new s.s. Empress of Asia, returned to Montreal with the directors.

American Society of Mechanical Engineers.—The railway session of the forthcoming meeting of this association has been fixed for Dec. 3, when steel, and steel underframe box cars will be discussed, a paper on all steel box cars being prepared by W. F. Keisel, Jr., Assistant Engineer, Pennsylvania Rd., and one on steel underframe box cars, by R. W. Burnett, General Master Car Builder, C.P.R., Montreal.

Quebec Transportation Club.—A number of the members made a trip, leaving Quebec, Sept. 14, by C.P.R., to Toronto, thence by R. & O.N. Co.'s line to Lewiston, and on to Niagara Falls, Buffalo, Rochester and Charlotte, thence by R. & O.N. Co.'s line to Montreal, where they disbanded.

Roadmasters' and Maintenance of Way Association.—The 31st annual convention was held at Chicago, Ill., Sept. 9-12. There was an attendance of over 200 members, and a considerable number of manufacturers of track materials had exhibits.

Canadian Pacific Railway Construction, Betterments, Etc.

Eastern Division.—The Board of Railway [illegible] grade of portions of the line from mileage 6.35 at Farnham, northwesterly to mileage 19.89 at St. Johns, Que., and has authorized the opening for traffic of the second track from Farnham, mileage 6.7 to Iberville Jct., mileage 18.7. The first order covers the [illegible] between Farnham and St. Johns, and the second authorizes the use for traffic of the [illegible]

Ontario Division.—C. P. R. engineers arrived in Kingston, Ont., Sept. 12, to examine into the improvement of terminal facilities in that city. It is said that a line will be built from Tete de Pont barracks to the present station, and that a new station will be built on Ontario St. between Brock and [illegible]

The ballasting on the second track from [illegible] Guelph Jct. has been completed [illegible]ille. The concrete work for [illegible] Dixie creeks is being put in, and when the steel work on these is finished this section [illegible] Cooksville the work is making satisfactory [illegible] whole 29 miles of second track in operation by the end of the year. Additional siding [illegible]n is being put in at Dixie and [illegible]lle, and a new station has been erected at Dixie. It is said that when the second [illegible] is opened a new station will be built [illegible]ent town station and the junction station, both of which will be abandoned.

Press reports state that surveys have been made by F. B. Tapley, Resident Engineer at London, for a line to connect the St. Marys and Western Ontario Ry. with the main line running into London. It is also reported that the project for a line from Pottersburg to the downtown sections of London has been abandoned for the present.

Tillsonburg, Lake Erie and Pacific Ry.—The Dominion Government has entered into [illegible]

Lake Superior Division.—The Board of [illegible]en mileage 16.91 and 21.79, [illegible]bdivision. These revisions are [illegible] with the second track now being [illegible]

[illegible]derable improvements are being carried out in the yards at Port Arthur, Ont., [illegible] thereto. In order [illegible]ls, similar to [illegible]tion for the [illegible]

Manitoba Division.—[illegible]

[illegible] hotel which [illegible]

[illegible] the line under construction from Boissevain, on the Souris Branch, to Lauder, Man., Sept. 30.

Saskatchewan Division.—The Board of Railway Commissioners has authorized the opening for traffic of the second track between Chaplin, mileage 54, to Ernfold, mileage 66.5, on the Swift Current Subdivision. Grading has been completed for some distance farther west, and it is expected that the entire second track into Swift Current will be laid by the end of October.

A contract has been entered into between the Dominion Government and the C. P. R., under the act granting aid for the construction of certain railways, for the building of a line from Moose Jaw, Sask., northwesterly for 123 miles. This line has been built and is in operation.

What is known as the Weyburn-Lethbridge branch has been in operation for some time for 115 miles west of Weyburn. The Board of Railway Commissioners, Sept. 4, authorized the opening of a further 30 miles. The line is also being built easterly from Stirling ,Alta., and the link to connect the two sections has been authorized by the management. It is expected to have the entire line in operation by the end of 1914. Divisional points are to be located at Assiniboia and Shunavon.

Alberta Division.—Satisfactory progress is reported to be being made with the grading on the section of the Weyburn-Lethbridge line located in Alberta. The line starts out from Stirling, and will connect at the provincial boundary with the section going west from Weyburn. The line from the east is expected to be graded to the provincial boundary this year. It is expected that a divisional point will be located in Alberta in range four.

The Board of Railway Commissioners has authorized the opening for traffic of the branch line from Suffield westerly to Terrace, mileage 0 to 26.4.

The revised location plans of the Bassano easterly branch from mileage 98.72 to 115.59 have been approved by the Board of Railway Commissioners.

Alberta Central Railway.—A contract has been entered into with the company, by the Dominion Government under the act granting aid to certain railways, for the building of a line from Red Deer to Rocky Mountain House, Alta., 70 miles.

The Board of Railway Commissioners has approved of revised location plans for this line from mileage 10 to 20.

Pacific Division.—The Board of Railway Commissioners has approved of revised location plans for the Kootenay Central Ry., under construction by the C. P. R., from mileage 37.35 southeasterly to mileage 57.19.

The preliminary work for the electrification of [illegible] section of the C. P. R. is being progressed with. The power plant of the West Kootenay Power and Light Co. is being increased to meet the C. P. R. requirements.

The second track work between Mission [illegible] completed. The bridge over the Stave River at Ruskin has been completed, but that over the Harrison [illegible] Feb., 1914. This, however, will not pre[illegible]

Hotel Vancouver.—The [illegible] City Council approved plans for extensions to [illegible] The [illegible]

Grand Trunk Railway Betterments, Construction, Etc.

Southern New England Ry.—Press reports, Sept. 15, state that the various subcontractors on this line from Palmer, Mass., to the interstate line between Massachusetts and Rhode Island, have been directed to resume work. Work has been suspended for some months.

St. Lambert, Que.—A contract is reported let to Roberts and Shaeffer Co., for the building of a 600 ton coaling plant at St. Lambert, Que., at an estimated cost of $17,000.

London Improvements.—H. E. Whittenberger, General Superintendent, stated in London, Ont., Aug. 14, that nothing whatever would be done in the way of reopening the track elevation question in that city until after the work in progress in Toronto had been finished. The tracks will be elevated and a new station built, but it will be some time before anything can be done.

Holmedale Switch, Brantford.—The G.T.R. has announced to the Brantford, Ont., City Council its decision to abandon its intention to build a switch into the Holmedale industrial section for the construction of which an agreement was entered into in 1910. The right of way which was acquired for the spur is being offered for rental. (Sept., pg. 427.)

Yard Limit Rules on Canadian Pacific Railway Western Lines.

The Board of Railway Commissioners issued general order 108 under date of Aug. 11 as follows:—Re consideration of matter of yard limit boards. Upon hearing the matter at the sittings in Winnipeg, May 30, in the presence of counsel for and representatives of the Brotherhood of Locomotive Engineers, the Brotherhood of Locomotive Firemen and Enginemen, the Canadian Pacific, Grand Trunk, Grand Trunk Pacific, and Canadian Northern Railway Companies, and what was alleged; and upon reading the report of the Chief Operating Officer of the Board, it is ordered that the C.P.R. withdraw its special rule F applying to western lines, and hereafter observe the uniform rules of the Board regarding yard limits.

The C.P.R.'s rule F above referred to, in force on lines west of Port Arthur, Ont., is as follows:—Where there are no yard limit boards, the outer main track switches of passing tracks, unless otherwise directed, will be considered the yard limits within the meaning of rule 93."

In giving judgment Chief Commissioner Drayton said:—"As stated by me at the hearing I am still of the view that special rule F of the C.P.R. is in conflict with rules approved by the Board. Uniformity of practice is an essential. What the C.P.R. has found to be good practice in the east, as admitted by the company, may properly be adopted in the west. Therefore I think an order should go directing the company to withdraw its special rule F applying to western lines, and hereafter observe the Board's uniform rules regarding yard limits."

On Sept. 9 the Board passed order 20311 extending to Jan. 1, 1914, the time within which the C.P.R. shall comply with general order 108.

C.P.R. Observation Cars in Europe.—As stated at the inauguration of the C.P.R. observation car service in Austria, the contemplated extension of the route has taken place, the cars now being operated through the Austrian Tyrol to Zurich, Switzerland, over the Swiss Government Railways.

Canadian Railway
and
Marine World
[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

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TORONTO, CANADA, OCTOBER, [illegible]

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Discontinuance of Cartage Service by the Railway Companies.

[illegible] no jurisdiction in the matter. The Board, however, asked the railway companies to continue the service to Jan. 1, 1914. This the railways have consented to do on the basis of 3c. per 100 lbs. tonnage freight, and 20c. for smalls, the previous rates being [illegible]

The Intercolonial Ry. has issued a circular stating that its cartage service will be continued at Montreal and Ste. Hyacinthe, Que. at [illegible] per 100 lbs.

The railway companies operating west of Port Arthur gave notice recently that the practice of advancing cartage charges on outward shipments and collecting the same from the consignee at destination would be discontinued Oct 1. Until a little over a year ago, the rates to and from Winnipeg included the charge for cartage when performed by the railway companies' cartage agents. If cars were loaded or unloaded on private sidings, or the freight carted by the shippers or consignees themselves, a reduction was made from the rates of 3c. per 100 lbs. on the first four classes, and 2c. per 100 lbs. on 5th class traffic. Upon the reissuance of the class tariffs to western points, brought about by the necessary revision of rates as a result of the decision of the Board of Railway Commissioners in the so called Regina rate case, the rates were published exclusive of cartage, i. e., shippers and consignees were obliged to furnish their own cartage, but although no cartage tariff was published an arrangement was entered into whereby the railways would bill forward, for collection from consignee, the cost of the cartage on outbound business. It is this practice of billing forward the cartage on outbound traffic that the railway companies have now withdrawn. A number of the western boards of trade have memorialized the railway companies to continue the practice above mentioned, as otherwise the shippers will have to pay the outward cartage charges themselves.

Steamship Ticket Agents Association at Vancouver.

The Ocean Steamship Ticket Agents Association has been organized at Vancouver, for business and social purposes, the members being the principal agents in Vancouver handling ocean steamship tickets, including H. G. Smith, C.P. & T.A., Grand Trunk Ry., Chairman; C. E. Lang, C.P. & T.A., Northern Pacific Ry.; John Moe, C.P. A., Canadian Pacific Ry.; G. Coombe, C.T.A., Canadian Pacific Ry.; A. W. Nase, Commercial Agent, C.M. & St. P. Ry.; J. A. M. Faulds, Manager, Passenger Department, D. E. Brown, Hope & Macaulay Co.; C. Millard, D.T.A., Canadian Pacific Ry.; A. Whitnall, C.P. & T.A., Great Northern Ry.; J. C. Irons, General Agent, Canadian Australian Royal Mail Line; V. G. Massi, Managing Director, Italian Commercial Exchange.

The objects of the Association are to outline certain rules for guidance in the mem- [illegible]

The [illegible] power yacht [illegible]

Railway Apprentices' Mechanical Drawings at the Canadian National Exhibition.

In the mechanical drawing competition at the Canadian National Exhibition at Toronto this year, drawings entered by appren- [illegible] G.T.R. Stratford, Ont., shops taking five out of the six prizes, and an apprentice from the G.T.R. Montreal shops, the remaining [illegible] three groups, with a first and second prize of [illegible] as follows:

Hydraulic or pneumatic machinery—1st prize, H. Ord, G.T.R., Stratford, accumulator; 2nd prize, L. Ireland, G.T.R., Stratford, staybolt breaker.

[illegible] Tonge, G.T.R., Stratford, locomotive; 2nd prize, J. Lee, G.T.R., Montreal, crane.

Electrical equipment—1st prize, L. Bixon, G.T.R., Stratford, commutator; 2nd prize, W. Dunn, G.T.R., Stratford, motor and generator.

There were 20 entries in this competition and practically every drawing was of such a quality as to reflect great credit not only on the apprentice, but also on the instructors. The judge was J. G. Herring, Consumers Gas Co., Toronto.

Detroit and Huron Railway Co.

E. J. Chamberlin, President G.T.R., G.T.P.R. and Detroit and Huron Ry. Co., has issued a circular stating that the Detroit and Huron Ry., extending from Cass City to Bad Axe, Mich., was opened for operation of freight and passenger service on Sept. 28. The following officers are appointed and have jurisdiction:

TRANSPORTATION DEPARTMENT.—H. G. Kelley, Vice President, in charge of Construction, Transportation and Maintenance, Montreal; U. E. Gillen, General Superintendent, Chicago; J. Caldwell, Superintendent, Detroit.

TRAFFIC DEPARTMENT.—J. E. Dalryple, Vice President, in charge of Traffic, Montreal; R. L. Burnap, Assistant Freight Traffic Manager, Chicago; J. D. McDonald, Assistant General Passenger Agent, Chicago.

ACCOUNTING DEPARTMENT.—W. H. Ardley, General Auditor, Montreal.

All of the officials above mentioned are in the G.T.R. service.

Canadian Ticket Agents' Association.—The 27th annual meeting will be held at Cleveland, Ohio, Oct. 8, 9 and 10. The members and the ladies accompanying them will assemble at Buffalo, N. Y., on Oct. 7, and will leave there at 9 p.m., by the s.s City of Buffalo, as guests of the Cleveland and Buffalo Transit Co. The headquarters in Cleveland will be at the Hollenden Hotel. The party will leave Cleveland on the evening of Oct. 10 on the return trip.

Mainly About Transportation People.

SIR WILLIAM YOUNG, director, G.T.R., [illegible] a tour through Canada.

SIR THOMAS TAIT has rented D. Lorne [illegible] in Montreal for the winter.

H. L. DRAYTON, Chief Railway Commissioner, returned to Canada, from Great Britain, Sept. 20.

[illegible] Commercial Acetylene Co., of New York, died in Toronto, Sept. 10.

A. B. GRAY, Trackmaster, Intercolonial Ry., New Glasgow, N.S., has retired on pension after 47 years service.

J. POWELL, Chief Draughtsman, Motive Power Department, G.T.R., Montreal, has gone to England on a short visit.

WM. CARPENTER SMITH, Chief Engineer of Maintenance-of-way, Northern Pacific Ry., died at St. Paul, Minn., recently.

SIR H. MONTAGUE ALLAN and Lady Allan returned to Montreal, Sept. 5, after spending the summer at Cacouna, Que.

HUGH SUTHERLAND, Executive Agent, Canadian Northern Ry., Winnipeg, left there [illegible]

Miss Hazel Allan, daughter of **ANDREW A. ALLAN**, of the Allan Line, was married in Montreal, Sept. 18, to C. Heubach, of Winnipeg.

C. N. ARMSTRONG, Managing Director, Central Ry. Co. of Canada, returned to Montreal, Sept. 1, after spending the summer in Europe.

G. U. RYLEY, Land Commissioner, G.T. Pacific Ry., Winnipeg, and Mrs. Ryley expect to return to Winnipeg, during October, from a trip to Prince Rupert, B.C.

John Tombs, who died at Montreal, Aug. 29, aged 65, was father of **GUY TOMBS**, General Freight Agent, Canadian Northern Ry. lines east of and including Ottawa.

Miss M. Sutherland, youngest daughter of **J. N. SUTHERLAND**, formerly General Freight Agent, C.P.R., at St. John, N.B., and now of Oakville, Ont., was married there Sept. 15, to W. M. Cruthers, of Peterboro, Ont.

JAMES PLAYFAIR, Vice President and [illegible] succeeding his father, the late John S. Playfair.

K. ELLIOTT, chief clerk to the Assistant Freight Traffic Manager, Western Lines, C.P.R., Winnipeg, was presented with a cabinet of silver, by a number of his associates, recently, on the occasion of his marriage.

Miss M. B. Emmerson, youngest daughter of **HON. H. R. EMMERSON**, M.P., [illegible] Minister of Railways and Canals, was married at Dorchester, N.B., recently, to H. K. Bowes, M.A., of the Railways and Canals Department, Ottawa.

Ottawa press reports state that **HON. M.** [illegible]

[illegible] bed at the Royal Montreal Golf Club, Dixie, Que., Sept. 9, was the youngest son of the [illegible] and was buried there.

Mrs. Ussher, wife of **C. E. E. USSHER**, [illegible] Montreal after spending several weeks in California.

ANDREW STRANG, Collector of Customs at Winnipeg, and a well known western pioneer, who died there Sept. 4, aged 64, was, in 1865 in G.T.R. service in Toronto, and went to Winnipeg in 1868, as representative of a commercial house.

JAMES REID, President, Reid Wrecking Co., Sarnia, Ont., died at Detroit, Mich., Sept. 2. He was connected with the wrecking business on the Great Lakes for over 40 years, and retired from active business about four years ago, on account of ill health.

SCOTT GRIFFIN, European Manager, Canadian Northern Ry. and Canadian Northern Steamships, and Mrs. Griffin, have returned to London, Eng., after spending the summer in Canada, with Mrs. Griffin's parents, Sir William and Lady Mackenzie.

J. M. GRANT, who died at Southsea, Eng., recently, aged 84, was Secretary of the G.T.R. in its early days, serving under three successive Presidents. He retired from the position about 40 years ago and became a member of the London Stock Exchange.

J. E. Duval.

[illegible]

HENRI MENIER, who purchased Anticosti Island, some years ago, and who, in connection with the property, has been carrying on considerable development work there, including the construction of a railway, and the operation of a steamship line to Europe, died at Paris, France, Sept. 8, aged 60.

SIR WILLIAM MACKENZIE, President, Canadian Northern Ry., is reported to have added to his many varied interests, by acquiring control of the Canadian Fish and Cold Storage Co., owning what is stated to be the largest fishing fleet on the northern Pacific, and a large cold storage plant at Prince Rupert, B.C.

E. J. CHAMBERLIN, President, G.T.R. and G.T. Pacific Ry., has been created a Knight of Grace of the Order of the Hospital of St. John of Jerusalem, and **GEORGE BURY**, Vice President, C.P.R., and **H. G. KELLEY**, Vice President, G.T.R., have been created Esquire and Honorary Esquire of the same order, respectively.

JOHN STUART, who died at Toronto, Sept. 15, aged 83, was for several years interested in railway construction, and was one of the promoters, and a director of the Wellington, Grey and Bruce, Hamilton and Lake Erie, and Hamilton and North Western Rys. In 1880 he was a member of the Howland syndicate, which offered to build the C.P.R.

JACOB SERSON, Provincial Superintendent of Bridges for British Columbia and a resident of Kootenay, died in Nelson, B.C., recently, aged 69. He was engaged in construction work on the C.P.R. 38 years ago and was with that company, engaged mostly on bridge work, until eight years ago, when he was appointed to the position which he held at the time of his death.

Lady **SHAUGHNESSY**, who had not been feeling in the best of health for some time, underwent an operation, Sept. 6, at the Royal Victoria Hospital, Montreal, and is reported to be progressing satisfactorily. Sir Thos. Shaughnessy, who was on his annual trip over the C.P.R. system, prior to the annual meeting, returned from Moose Jaw, Sask., by special train immediately on being notified.

ALEXANDER McDONALD, who has been appointed Division Freight Agent, Prince Edward Island Ry., Charlottetown, was born at Vernon River, P.E.I., Nov. 17, 1846, and entered P.E.I.R. service, Apr. 1, 1881, since when he has been, to Oct. 1, 1894, chief clerk to Superintendent, Charlottetown; Oct. 1, 1894, to July 1, 1897, Superintendent, Charlottetown; July 1, 1897, to Sept. 1, 1913, chief clerk to Superintendent, Charlottetown.

J. E. LINAHEN, of the Galena-Signal Oil Co's. expert staff, who has had his headquarters at Richmond, Que., for a number of years, has been appointed Superintendent, Expert Department, in full charge of all matters heretofore pertaining to the office of Manager and with office at Franklin, Pa. E. V. Sedgwick, heretofore Manager, Expert Department, has been assigned to other duties at the New York office.

JOHN L. HODGSON, whose appointment as Master Car Builder, G.T. Pacific Ry., Transcona, Man., was announced in our last issue, was born at Simcoe, Ont., in 1858, and entered G.T.R. service at Brantford, Ont., going from there to Toronto, as Car Foreman in 1884, and to Port Huron, Mich., as Master Car Builder in 1897, in which position he remained until Aug. 21, 1913. On his leaving Port Huron, the local employes presented him with an automobile.

W. R. FITZMAURICE, whose appointment as Assistant Superintendent, Moncton and Ste. Flavie District, Intercolonial Ry., Newcastle, N.B., was announced in our last issue, was born at Bedford, N.S., Mar. 19 1870, and entered I.R.C. service May 21, 1886, since when he has been, to 1889, operator at various stations in Nova Scotia; 1889 to 1897, assistant agent, Springhill Jct., N.S.; 1897 to 1898, agent, Oxford Jct., N.S.; 1898 to Aug. 12, 1913, agent, Amherst, N.S.

W. J. ANDREWS, whose appointment as Locomotive Foreman, C.P.R., Neudorf, Sask., was announced in our last issue, served his apprenticeship, from May, 1895, to Nov., 1901, with the Great Western Ry., Swindon, Eng., and entered C.P.R. service, Mar. 15, [illegible] at Winnipeg. He was, from May 15, 1910, to May 31, 1913, Night Shop Foreman, Winnipeg; June 1 to 16, 1913, Locomotive Foreman, Winnipeg; June 17 to July 31, 1913, Locomotive Foreman, Minnedosa, Man.

J. N. FINLAYSON, for the past year engineer for Waddell & Harrington, consulting engineers, of Kansas City, Mo., on bridge construction for the Canadian Northern Pacific Ry. in British Columbia, has resigned to become Professor of Civil Engineering at Dalhousie University, succeeding Prof. C. D. Howe. Mr. Finlayson was educated at McGill University, and was instructor there for two years. For the past two years he has been with Waddell & Harrington.

J. E. DUVAL, whose appointment as General Superintendent Car Service, G.T.R., Montreal, was announced in our last issue, and whose portrait appears in this issue, entered transportation service, Nov., 1884, as agent and operator, Canada Atlantic Ry., Coteau Landing, Que., and from May, 1885 to 1902, was train dispatcher; 1902 to 1904, Car Service Agent; 1904 to 1906, Chief Inspector, Board of Railway Commissioners; in 1906 he organized the Canadian Car Service Bureau, of which he was appointed Manager, holding that position until Aug. 1, 1913.

WILLIS W. YEAGER, who has been appointed Locomotive Foreman, G.T. Pacific Ry., Wainwright, Alta., was born in Wentworth county, Ont., May 5, 1864, and entered railway service, Mar., 1887, since when he has been, to Dec., 1888, fitter, Northern and North Western Ry., Hamilton, Ont.; Dec., 1888, to Dec., 1893, fitter, G.T.R., Hamilton, Ont.; Dec., 1893, to Mar., 1909, leading hand, G.T.R., Hamilton, Ont.; Mar. to July, 1909, Locomotive Foreman, G.T.R., Hamilton, Ont.; Nov., 1909, to Sept., 1913. Locomotive Foreman, G.T. Pacific Ry., Edmonton, Alta.

In connection with the recent retirement of D. POTTINGER, I.S.O., who was Assistant Chairman of the Canadian Government Railways Managing Board, until its abolition, the Canadian Government Railways Employes Relief and Insurance Association, at Moncton, N.B., of which he had been President since its inception in 1890, has passed a resolution expressing its appreciation of the active interest taken by him in its welfare and its members, and for the manner in which he presided at its meetings, and wishing him many years of well earned rest.

W. ROBERTS DEVENISH, A.M. Can. Soc. C.E., whose appointment as Division Engineer, Canadian Government Railways, Moncton, N.B., was announced in our last issue, was born in County Tipperary, Ireland, Nov. 21, 1882, and entered transportation service in 1903, serving with the C.P.R. for eight years, in various capacities in the Engineering and Maintenance of Way Department, from rodman to Assistant Division Engineer, Lake Superior Division. He was latterly engaged as Assistant Engineer with the National Transcontinental Ry. Investigation Commission.

F. PRICE, whose appointment as Superintendent of Car Service, G.T.R., Montreal, was announced in our last issue, was born at Montreal, June 11, 1864, and entered G.T.R. service in 1879, since when he has been, to 1902, successively, stenographer, clerk to Superintendent, secretary to General Superintendent, chief clerk to Car Service Agent and chief clerk to Manager; 1902 to May 1906, Master of Transportation, Middle Division; May 1906 to Jan. 14 1913, Superintendent of Car Service, Montreal; Jan. 14 to Aug. 22, 1913, Superintendent of Passenger Service, Montreal.

G. A. STOKES, whose appointment as Division Agent, Ontario Lines, G.T.R., Toronto, was announced in our last issue, was born in Nassagaweya Tp., Ont., July 23, 1879, and entered G.T.R. service, Nov. 15, 1897, since when he has been, to Oct. 15, 1898, operator, Listowel, Ont.; Oct. 15, 1898, to Mar., 1899, relieving agent; Mar., 1899, to Apr., 1907, agent, consecutively at Harriston, Wingham, Wiarton and Brantford, Ont.; Apr., 1907, to Nov. 1, 1910, dispatcher, Stratford, Ont.; Nov. 1, 1910, to Sept. 13, 1912, Yardmaster, Don station, Toronto; Sept. 13 to Oct. 25, 1912, General Yardmaster, Toronto Terminals; Oct. 25, 1912, to Aug. 10, 1913, Terminal Superintendent, Toronto.

M. A. FULLINGTON, A. M. Can. Soc. C. E., who has been appointed Assistant Superintendent, District 4, Eastern Division, C.P.R., Ottawa, Ont., was born at Johnson, Vt., May 12, 1880, and entered C.P.R. service Oct., 1904, since when he has been, to Jan., 1905, rodman, Toronto; Jan. to Oct., 1905, transitman, London, Ont.; Oct, 1905, to Apr., 1907, Assistant Engineer, Toronto Terminals; Apr., 1907, to Jan., 1912, Resident Engineer, Districts 1 and 4, Ontario Division, Toronto; Jan., 1912, to Jan., 1913, Engineer, Dominion Atlantic Ry., Kentville, N.S.; Jan. to July, 1913, Assistant Division Engineer, C.P.R., Montreal; July to Sept., 1913, Assistant Engineer, Eastern Lines, C.P.R., Montreal.

J. Murray Gibbon,
General Publicity Agent, Canadian Pacific Railway.

E. S. SANDS, Supervising Engineer, Department of Natural Resources, C.P.R., at Calgary, Alta., has been appointed City Engineer of Houston, Tex. He is a native of Columbia, Ohio, and graduated from the University of Wisconsin in 1900. After spending two years at the university as instructor in civil engineering, he entered the U.S. Reclamation Service, and was connected with it until 1910, preparing plans and estimates and supervising construction work on several projects. For a year he was in other service, part of the time Construction Superintendent for J. G. White & Co., and part of the time Manager of the Upper Columbia Co. He then spent another year with the U.S Reclamation Service, and since April, 1912, has be in the position he now leaves.

LAFAYETTE S. BROWN, whose appointment as Superintendent, Truro, Sydney and Oxford District, Intercolonial Ry., New Glasgow, N.S., was announced in our last issue, was born at Nelson, N.B., Oct. 19, 1864, and entered I.R.C. service, Jan. 15, 1880, since when he has been, to Dec. 20, 1881, cleaning locomotives, and machinist helper, Newcastle, N.B.; Dec. 20, 1881 to Sept. 5, 1882, shunting in Newcastle yard and learning telegraphy; Sept. 5, 1882 to Nov. 25, 1883, assistant agent, Newcastle, N.B.; Nov. 26, 1883 to Oct. 4, 1898, train dispatcher, Moncton and Ste. Flavie District, Campbellton, N.B.; Oct. 4, 1898, to Apr. 30, 1912, Chief Dispatcher, New Glasgow, N.S.; May 1, 1912, to July 31, 1913, Assistant Superintendent, Moncton and Ste. Flavie and Fredericton to Loggieville, N.B., Newcastle, N.B.

COLLINGWOOD B. BROWN, A. M. Can. Soc. C. E., who was recently appointed Chief Engineer, Canadian Government Railways, Moncton, N.B., was born at Ithaca, N.Y., Aug. 27, 1879, and graduated from Cornell University. In the summer of 1898 he was an assistant on U.S. geological survey work in New York, and in the following summer acted as topographer and instrument man on survey for the New York State College of Forestry. He entered C.P.R. service in 1901, since when he has been, draughtsman and rodman, Trail, B.C.; 1902, Assistant Engineer, Bridge Department, Montreal; Assistant Engineer in charge of erection of Red River bridge, Winnipeg, and also of the construction of the annexes to the elevators at Fort William, Ont.; 1902 to 1904, Resident Engineer, District 2, Ontario Division, London; and Resident Engineer, Toronto Terminals; 1904 to 1906, Assistant Division Engineer, Western Division, Calgary, Alta.; 1906 to 1908, Division Engineer, Atlantic Division, St. John, N.B.; 1908 to 1912, Division Engineer, Eastern Division, Montreal; 1912 to July 1913, Principal Assistant Engineer, Eastern Lines, Montreal.

GEORGE SPENCER, who has resigned from C.P.R. service, and is reported to have received an appointment from the Board of Railway Commissioners, was born in London, Eng., Feb. 21, 1865, and entered railway service, July, 1880, since when he has been, to Mar., 1881, assistant agent, Toronto, Grey and Bruce Ry., Dundalk, Ont.; Mar. to July, 1881, agent, same road, Waldemar, Ont.; July, 1881, to Oct., 1882, operator, same road, Toronto; Oct., 1882, to Nov., 1883, dispatcher, same road, Toronto; Nov., 1883, to June, 1884, dispatcher, Ontario and Quebec Ry., (which leased the T. G. & B.R.), Toronto; June, 1884, to Aug., 1887, dispatcher, C.P.R. (which took over the O. & Q.R.), Toronto; Aug., 1887, to Aug., 1889, dispatcher, C.P.R., Smiths Falls, Ont.; Aug., 1889, to Oct., 1891, dispatcher, C.P.R., Toronto; Oct., 1891, to May, 1901, Chief Dispatcher, C.P.R., Smiths Falls, Ont. and in Nov., 1892, the duties of Trainmaster were added, and in Mar., 1898, the position of Trainmaster was abolished; May, 1901, to May, 1903, Chief Dispatcher, Ontario Division, C.P.R., Toronto; May, 1903, to Nov., 1906, Superintendent, District 1, Ontario Division, C.P.R., Toronto; Nov., 1906, to Jan., 1911, Superintendent, District 1, Lake Superior Division, C.P.R., North Bay, Ont.; Jan., 1911, to Sept. 8, 1913, Superintendent, District 1, Lake Superior Division, C.P.R., Sudbury, Ont.

A. COPONY, whose appointment as Master Car Builder, Western Lines, G.T.R., Port Huron, Mich., was announced in our last issue, is a British subject, born in Vienna, Austria, in 1880, where he attended the public and high schools, and graduated from the Engineering College in 1901. From Aug., 1901, to May, 1907, he occupied positions of draughtsman, designer and Department Superintendent with machinery firms in Vienna, and as Chief Inspector, Whitehead Torpedo Works, Fiume, Hungary. He went to the United States in

May, 1907, where he entered the service of the Standard Steel Car Co., Butler, Pa., as draughtsman, and later occupied positions as assistant chief draughtsman, Motor Truck Department, and on the opening of the company's Hammond works, was transferred there, and later appointed Master Mechanic, Passenger Car Department. From Feb. to Oct., 1910, he was in charge of the tool designing for the new passenger car shops of the American Car and Foundry Co., St. Charles, Mo., and engaged in experimental work at the same company's St. Louis shops. He resigned in Oct., 1910, on his appointment as Chief Draughtsman, Car Department, Western Lines, G.T.R., and was shortly after transferred to Montreal as Chief Draughtsman, Car Department, there, which position he held to the date of his present appointment.

T. C. BURPEE, M. Can. Soc. C. E., whose appointment as Superintendent Engineer, Canadian Government Railways, Moncton, N.B., was announced in our last issue, was born at Sheffield, N.B., Dec. 11, 1852, and entered railway service in Aug. 1875, since when he has been, to Nov. 1875, chairman, New Brunswick Ry.; Nov. 1876, to Jan. 1877, levelman, same road; June 1881 to Jan. 1882, rodman, Chicago, Milwaukee and St. Paul Ry., Spirit Lake Branch, Iowa; Nov., 1884 to Jan., 1885, on survey through northern Maine, International Ry.; Aug. 1885 to Jan., 1887, rodman and Assistant Engineer on Maintenance of Way, New Brunswick Ry.; Jan. 1887 to Jan. 1, 1890, Assistant Engineer, lines in New Brunswick and Maine, C.P.R.; June to Aug. 1890, transit man on preliminary survey, Bangor and Aroostook Rd.; Aug., 1890, to Apr., 1891, chief of location party, same road; Apr. 1891 to Jan., 1896, Assistant Engineer of Construction, same road; Jan. to May, 1896, chief of location party, Woodstock and Centreville Ry., N.B.; June to Dec., 1896, Assistant Engineer in charge of construction of yard at Old Town, Me., Bangor and Aroostook Rd.; May to Aug., 1897, Assistant Engineer on canal construction, Cardinal, Ont.; Aug., 1897, to 1899, Chief Assistant Engineer, Intercolonial Ry.; July, 1899, to Aug., 1913, Engineer of Maintenance, same road, Moncton, N.B.

F. BARLOW CUMBERLAND, who died at Dunain, Port Hope, Ont., Sept. 1, was born at Portsmouth, Eng., Aug. 5, 1846. He came to Canada at an early age, and was educated at the Model School, Toronto, Cheltenham College, England, and Trinity University, Toronto, taking the B.A. degree in 1867, and M.A. in 1870. In conjunction with the late Sir Frank Smith, he founded the Niagara Navigation Co. in 1880. For some years he was in the service of the Great Western Ry., and later was Freight and Passenger Agent, Northern Ry., and Traffic Manager, Lake Superior Line Steamships, afterwards amalgamated with the C.P.R. He was responsible for placing the s.s. Campana, the first one on the route, on the Upper Lakes. This was the first vessel to be cut in two in order to pass from the ocean through the St. Lawrence Canals. For several years he conducted a ticket agency in Toronto. During 1903-04, he resided in England, where he represented the Independent Order of Foresters and was President of the Canadian Club in London. He was Vice President of the Niagara Navigation Co., up to the time of its recent absorption and was connected with several financial companies, being elected a director of the Ontario Bank by the shareholders, after the suspension in 1906. Amongst various institutions with which he was connected in an official capacity, are, the St. George's Society, Toronto University, Ontario Historical Society, National Club, Toronto, Sons of England, Trinity University, Toronto, etc. He was a captain in the 10th Royals, and served in the Fenian raid. He wrote the following books: The Northern Lakes of Canada, History of the Union Jack and Flags of the Empire, and The Navies on Lake Ontario in 1812.

JAMES ROSS, M. Can. Soc. C.E., who died at Montreal, Sept. 20, was born in Cromarty, Scotland, in 1848, and was educated in Scotland and England. He spent the early portion of his business career in Great Britain in connection with railway, harbor and water works, and went to the United States in 1868, where he was, from 1870 to 1873, Resident Engineer, and Chief Engineer, Ulster and Delaware Ry.; 1873 and subsequently, Resident Engineer, Wisconsin Central Ry.; Resident Engineer, Lake Ontario Shore Rd., and on coming to Canada, was appointed Chief Engineer, and later, General Manager, Victoria Ry. In 1878-79, he built the Credit Valley Ry., and was subsequently appointed General Manager. He was also Consulting Engineer, Ontario and Quebec Ry., and, in 1883, was in charge of the building of a portion of the C.P.R. west of Winnipeg, completing the construction of the line through the Mountain District in 1885, under the General Manager, Wm. C. Van Horne (now Sir William Van Horne.) In 1886 he was engaged with the C.P.R. location east of Montreal, and looked after the legislation regarding the C.P.R. through Maine. On the completion of this work, he undertook a contract for the remaining portion of the line not provided for, and was also interested in other important contracts elsewhere. He also built the Regina and Long Lake Ry. and the Calgary and Edmonton Ry., and, in conjunction with W. Mackenzie (now Sir William Mackenzie), purchased the Toronto Ry. from the city of Toronto, in 1892, afterwards reconstructing and electrifying it, and he was also concerned in the electrification of the street railways in St. John, Montreal and Winnipeg. He, also associated with Wm. Mackenzie, acquired the tramway system in Birmingham, Eng., and formed the City of Birmingham Tramways Co., in 1896, the system being eventually electrified and taken over by the city. He later became interested in the coal industry in Nova Scotia and obtained control of and reorganized the Dominion Coal Co., later becoming President; and he was also at one time President, Dominion Iron and Steel Co., and between these two companies there was a few years ago a series of disputes, involving a long litigation, which terminated in favor of the former and the practical amalgamation of the two concerns. In 1897, with Wm. Mackenzie, he secured a charter from the Government of Jamaica, for the construction of electric railways on the island. Amongst other companies with which he has been associated in various official capacities are: Mexican Light, Heat and Power Co., Montreal St. Ry. (now Montreal Tramways Co.), Toronto Ry., Montreal Light, Heat and Power Co., St. John Ry., Winnipeg Electric Ry., Dominion Bridge Co., Canadian General Electric Co., Montreal Rolling Mills (now Steel Co. of Canada), Royal Trust Co., Ontario Electrical Development Co., Lake of the Woods Milling Co., Columbia River Lumber Co., Canada Land and Investment Co., etc. He was also interested in the Montreal Art Association, and presented the Ross Memorial Hospital to Lindsay, Ont., besides subscribing liberally to other similar institutions in Montreal and elsewhere. His favorite recreation was yachting, and he only recently returned to Montreal from a cruise in the Mediterranean. He was Commodore of the Royal St. Lawrence Yacht Club and Hon. Lieut.-Col. of the Duke of York's Royal Canadian Hussars.

Discipline of Canadian Government Railways.

F. P. Gutelius, General Manager, issued the following circular Sept. 1.:—"Commencing this date, discipline will be administered as under: It is the intention to insist on a more rigid compliance with the rules and regulations, which are made for the protection of the lives of the public and employes, as well as for the protection of the railway's property. All employes will start with a clean record, beginning this date. Any exceptional service rendered will be credited to the employe's record. A monthly discipline list will be issued. This list will show cause, extent of discipline, or action and extent of reward. Employes will, as heretofore, be subject to summary dismissal for insubordination, drunkenness on or off duty, using intoxicating liquor when on duty, frequenting saloons, or places of low repute, incompetency, dishonesty, failing to carry out train orders and rules respecting train movement. Where previously discipline was meted out by suspension, demerit marks will be placed in the record of an employe. For every repetition of an offence by the employe, the number of demerit marks will be doubled. When the demerit marks against any employe number 60, his services will be dispensed with. For every 12 consecutive months, good service, free from demerit marks, an employe will have 20 demerit marks deducted from those that may stand against his record. Employes will be advised when demerit marks are recorded against them, the same as they have hitherto been advised respecting disciplinary measures in the past."

Department of Railways and Canals, Canada.

Welland Ship Canal.

Section No. 2.

NOTICE TO CONTRACTORS.

SEALED TENDERS, addressed to the undersigned and marked "Tender for Section No. 2 Welland Ship Canal," will be received at this office until 12 o'clock noon on Wednesday, October 15th, 1913.

Plans, specifications and form of contract to be entered into can be seen on or after this date at the office of the Chief Engineer of the Department of Railways and Canals, Ottawa, and at the office of the Engineer in Charge, St. Catharines, Ontario.

Copies of plans and specifications may be obtained from the Department on the payment of the sum of fifty dollars. To bona fide tenderers this amount will be refunded upon the return of the above in good condition.

Parties tendering will be required to accept the fair wages schedule prepared or to be prepared by the Department of Labour, which schedule will form part of the contract.

Contractors are requested to bear in mind that tenders will not be considered unless made strictly in accordance with the printed forms, and in the case of firms, unless there are attached the actual signature, the nature of the occupation, and place of residence of each member of the firm.

An accepted bank cheque on a chartered bank of Canada for the sum of $150,000.00, made payable to the order of the Minister of Railways and Canals, must accompany each tender, which sum will be forfeited if the party tendering declines entering into contract for the work at the rates stated in the offer submitted.

The cheque thus sent in will be returned to the respective contractors whose tenders are not accepted.

The cheque of the successful tenderer will be held as security, or part security, for the due fulfilment of the contract to be entered into.

The lowest or any tender not necessarily accepted.

By order,
L. K. JONES,
Asst. Deputy Minister and Secretary.

Department of Railways and Canals,
Ottawa, 22nd September, 1913.

Newspapers inserting this advertisement without authority from the Department will not be paid for it.—48056.

Railway Rolling Stock Notes.

The Quebec Oriental Ry. has ordered one snow plough from the Canadian Car and Foundry Co.

The Canadian Northern Ry. has ordered three snow ploughs from the Canadian Car and Foundry Co.

The Toronto, Hamilton and Buffalo Ry. has received one rebuilt official car, from the Preston Car and Coach Co.

The Intercolonial Ry. has ordered 250 box cars, 60,000 lbs. capacity, from Canadian Car and Foundry Co.

The Canadian Locomotive Co. has delivered 2 consolidation locomotives to the Canadian Northern Ry., and 2 ten wheel locomotives to the C.P.R.

The G.T.R. has ordered 3 steel mail cars from American Car and Foundry Co., and has received 19 Mikado locomotives, 62 ins. wheel, from Baldwin Locomotive Works.

The G.T. Pacific Ry. has received 20 cabooses, nos. 390120 to 390139, from G.T.R. car shops, Montreal, and 6 dining cars, nos. 4006 to 4011, and 5 tourist cars, nos. 3410 to 3414, from Pullman Co.

The Mond Nickel Co., Coniston, Ont., has ordered one mogul switching locomotive, type 2-6-0, cylinders 20 by 26 ins., 59 ins. driving wheels, 156,000 lbs. total weight in working order, from the Montreal Locomotive Works.

The Corbin Coal and Coke Co., Spokane, Wash., associated with the Eastern British Columbia Ry., has ordered one rotary snow plough, with 17 by 22 ins. cylinders and 10 ft. 7 ins. cut scoop wheel, from the Montreal Locomotive Works.

The Canadian Car and Foundry Co. has received orders for 17 single track snow plough frames and 9 double track snow plough frames, from the C.P.R.; 3 standard snow ploughs from the Canadian Northern Ry., and 1 snow plough from the Quebec Oriental Ry.

The Intercolonial Ry. has received 233 box cars, 60,000 lbs. capacity, and 48 platform cars, from Canadian Car and Foundry Co.; 3 baggage cars from the Preston Car and Coach Co.; 110 box cars from the Nova Scotia Car Works; 25 automobile box cars from its Moncton shops, and 3 sleeping and 2 dining cars, from Pullman Co.

The C.P.R., between Aug. 4 and Sept. 13, ordered the following rolling stock from its Angus Shops,—11 stock cars, 8 freight refrigerator cars, 2 ballast cars, 6 vans, 3 wedge ploughs, 5 flangers, 5 single track flangers, 5 double track flangers, and 16 single track snow ploughs, and 9 double track snow ploughs, from its Angus Shops and the Canadian Car and Foundry Co.

The Canadian Northern Ry., between Aug. 16 and Sept. 15, received the following additions to rolling stock,—8 cabooses from its Winnipeg Shops; 4 second class cars and 60 stock cars from the Crossen Car Co., Ont.; 218 box cars from the Nova Scotia Car Works; 20 box cars and 100 flat cars from the National Steel Car Co.; 60 refrigerator cars and 35 vans from the Mount Vernon Car Co.; 5 switching locomotives from the Canadian Locomotive Co.; 1 consolidation locomotive from Canadian Allis-Chalmers, Ltd.

The C.P.R. between July 31 and Sept. 13, received the following additions to rolling stock,—563 box cars, 13 stock cars, 95 vans, 5 suburban cars, 10 box baggage cars, 1 tourist car, 8 baggage and express cars, 8 class U3 locomotives, 4 class V3 locomotives, from its Angus Shops; 1,527 box cars, 59 steel flat cars, 2 pit cars and 3 first class cars, from the Canadian Car and Foundry Co.; 200 steel frame box cars from the National Steel Car Co.; 8 Jordan spreaders and 2 Industrial wrecking cranes, from F. H. Hopkins and Co.; 40 class P1 locomotives from the Montreal Locomotive Works; 2 class D10 locomotives from the Canadian Locomotive Co.; 741 steel frame box cars and 10 sleeping cars, from Barney and Smith Car Co.; 5 dining cars from the Pullman Co.; and 2 wrecking cranes from the Bucyrus and Industrial Cos.

Following are chief details of the scoop wheel rotary snow plough with 10 ft. 7 ins. cut, which the Corbin Coal and Coke Co. is having built by Montreal Locomotive Works:—

Cylinders	17 by 22 ins.
Wheel base, trucks	4 ft. 6 ins.
Wheel base, total	19 ft 8½ ins.
Weight in working order	148,140 lbs.
Weight on front truck	79,800 lbs.
Weight on back truck	68,340 lbs.
Boiler, type	Belpaire.
Boiler, diar. first ring	60 ins.
Boiler, pressure	190 lbs.
Firebox	92 by 50.
Tubes, no. and diar	212—2 ins.
Tubes, length	9ft. 8 ins.
Heating surface, tubes	1,022.32 sq. ft.
Heating surface, firebox	109 sq. ft.
Heating surface, total	1,131.32 sq. ft.
Grate area	32.63 sq. ft.
Wheels, type	Steel tired.
Wheels, diar.	33 ins
Journals	5½ by 10 ins
Brake	Westinghouse.
Truck, type	Four wheel
Grate, type	Cast iron rocking bars.

Following are chief details of the mogul switching locomotive, type 2-6-0, which the Mond Nickel Co. is having built by Montreal Locomotive Works:—

Cylinder	20 x 26 ins.
Tractive power	31,820 lbs.
Factor of adhesion	4.4.
Wheel base, driving	11 ft. 6 ins.
Wheel base, total	19 ft. 3½ ins.
Wheel base, engine and tender	50 ft 2 ins.
Weight on drivers	140,000 lbs.
Weight on engine truck	16,000 lbs.
Weight, engine and tender	258,000 lbs.
Boiler, type	Straight top.
Boiler, diar. first ring	72 ins.
Boiler, pressure	180 lbs.
Firebox	108 by 41¾ ins.
Crown staying	Radial.
Tubes, no. and diar.	311—2 ins.
Tubes, length	11 ft.
Heating surface, tubes	1,778 sq. ft.
Heating surface, firebox	175 sq. ft.
Heating surface, total	1,953 sq. ft.
Grate area	31 sq. ft.
Wheels, outside diar.	50 ins.
Wheels, kind	Cast iron.
Truck wheels, diar.	30 ins.
Tender wheels, diar.	33 ins.
Journals	9 by 12 ins.
Engine truck journals	6½ by 12 ins.
Tender truck journals	5 by 9 ins.
Journal boxes	Cast iron
Brakes	Westinghouse American
Truck, type	Two wheel with swing centre.
Tank, type	U shape sloping top.
Capacity, water	5,000 U.S. galls.
Capacity, coal	8 tons

Grand Trunk Pacific Railway Inspection.—The annual inspection trip over the system was recently made by A. W. Smithers, Chairman of the Board, London, Eng.; E. J. Chamberlin, President; W. Wainwright, Vice President, and W. M. Macpherson, director. About three weeks was spent in going over the line to the end of steel, stoppage being made at important points to study the country with a view to future developments.

The Board of Railway Commissioners has amended its recent order fixing the express delivery and collection limits for Steelton, Sault Ste. Marie, Ont., by extending the free area to include the triangular portion bounded by Wellington St., John St. and Cathcart St., and on both sides of Wellington St., from John St. to Hudson St.

The Canadian Northern Ex. Co. has opened offices at Lundar, Man., and Dummer and Hearne, Sask.

The Canadian Pacific Railway's Tunnel at Rogers Pass, B.C.

In connection with the building of a second track on the C. P. R., between Calgary, Alta., and Vancouver, B. C., a contract has been let, as stated in a previous issue, to Foley, Welch and Stewart, for the building of a tunnel, about five miles long, at Rogers Pass, B. C. The eastern portal of the tunnel will be at mileage 80.5, and the western portal at mileage 85.5, Mountain Subdivision, and in addition to the boring of the tunnel, the contract calls for the construction of 11.1 miles of double track line approaching the eastern portal, and 2.3 miles of double track line approaching the western portal. This work will reduce the height of the summit at which the line crosses the Selkirks by 537 ft.; will eliminate 4.25 miles of distance, and 2,500 degrees of curvature, and on 15 miles of track the gradient will be reduced from 2.2% to 1% or less. The use of about 4.5 miles of snowsheds will be obviated.

A. C. Dennis, who is in charge of the work for the contractors, states that nothing will be don in the way of starting work on the approaches to the tunnel this year. The camps at the tunnel portals have been erected, and the machinery for boring the tunnel is being delivered and set up.

The tunnel, which will be on a tangent throughout its entire length, will be on a 0.93% gradient ascending west, and will be a single one, carrying a double track 30 ft. wide by 20 ft. high. A new method of construction has been adopted for boring the tunnel. Instead of boring simply from the two ends, it has been decided to bore a pioneer tunnel 7 by 8 ft., parallel with the main tunnel, and cross cut at short intervals, so as to enable several headings to be worked simultaneously.

In boring the Canadian Northern Ry. tunnel under Mount Royal at Montreal, two shafts have been sunk from the ground level nearly 300 ft. in depth to the tunnel level. From these shafts the headings are driven in each direction, and on completion of the tunnel the shafts will be used for ventilating purposes. This method of working is always adopted in driving long tunnels, where the height from the top of the tunnel to the ground level is not too great. In the case of the Rogers Pass tunnel the height of the mountains through which it is to be driven precludes the possibility of vertical shafts being used. The pioneer tunnel will aid in the ventilation of the railway tunnel during its construction. The boring of the pioneer tunnel has been started, and the first cross cuts will be made when these have been driven about 2,000 ft. It is estimated that this part of the work will have been completed by Dec. 31. The plant for boring the tunnels is estimated to cost about $500,000. Mr. Dennis estimates that about 30 ft. of boring will be done per day, and that it will take about three years to complete the bore, from which about 250,000 cubic yards of material will be taken out through the pioneer tunnels.

The contractors are erecting model villages at the two portals of the tunnel, at a cost of $50,000. The floors of the buildings at Glacier are to be 8 ft. above the ground level, with bridges to connect the houses with the work. The buildings were designed by W. S. Painter, of Vancouver.

Dominion Railway Subsidy Agreement.—The Dominion Government, Aug. 25, entered into an agreement with the Tobique and Campbellton Ry. granting aid in the construction of a line from Plaster Rock to Riley Brook, N.B., 28 miles.

Transportation Appointments Throughout Canada.

[illegible]

Algoma Central and Hudson Bay Ry.—See Lake Superior Corporation.

Algoma Eastern Ry.—See Lake Superior Corporation.

Board of Railway Commissioners.—GEORGE SPENCER, heretofore Superintended, District 1, Lake Superior Division, C.P.R., Sudbury, Ont., is reported to have been appointed to a position under the Board of Railway Commissioners, at Winnipeg.

Boston and Albany Rd.—H. M. BRISCOE, heretofore Traffic Manager, has been appointed Vice President, vice J. H. Hustis, resigned. Office, Boston, Mass.

Canadian Government Railways.—R. W. SIMPSON, heretofore on the General Superintendent's staff, has been appointed General Fuel Agent. Office, Moncton, N.B.,

R. A. KLOCK has been appointed General Tie and Timber Agent. Office, Moncton, N.B.

O. CAMERON, heretofore Freight Claim Agent, Intercolonial Ry., has been appointed Freight Claim Agent, Canadian Government Railways. Office, Moncton, N.B.

G. A. FERNLEY, heretofore Soliciting [illegible]

[illegible] E. TIFFIN, heretofore General Traffic Manager [illegible] been stated in the September issue, that he had been appointed General Western Agent, at Toronto, in charge of territory in Ontario, west of Kingston and Sharbot Lake.

See also Intercolonial Ry. and Prince Edward Island Ry.

Canadian Pacific Ry.—[illegible] been in charge of the Publicity Department for a number of years, at Montreal, has [illegible] pany's interests at Ottawa. Mr. Ham has [illegible]

[illegible] Office, Farnham, Que.

[illegible]

[illegible] Soc. C.E., [illegible] Office, Ottawa, Ont.

[illegible] transferred to Lambton, Ont.

[illegible] appointed Assistant District Passenger Agent there. This is a new position.

T. MULLINS, heretofore Assistant City Passenger and Ticket Agent, Toronto, has been appointed City Passenger Agent there.

G. S. BEER, heretofore chief clerk, City Ticket Office, Toronto, has been appointed City Ticket Agent there.

E. H. WOOD, heretofore Car Foreman at Hochelaga, Que., has been appointed Division Car Foreman, Ontario Division, vice F. E. Warren, promoted. Office, Toronto.

W. J. FLYNN, heretofore Storekeeper at Havelock, Ont., has been appointed Storekeeper at Lambton, Ont., vice J. D. Fairbairn.

A. L. SMITH, heretofore Superintendent, District 3, Eastern Division, Montreal, has been appointed Superintendent, District 1, Lake Superior Division, vice Geo. Spencer, resigned. Office, Sudbury, Ont.

G. S. LYTLE, heretofore Inspector of Transportation, Winnipeg, has been appointed Car Service Agent, Manitoba Division, vice F. Walker, transferred. Office, Winnipeg.

[illegible]

W. THOMAS, heretofore chief clerk to General Superintendent, Alberta Division, [illegible] Motive Power, Western Lines, Winnipeg.

F. E. WARREN, heretofore Division Car Foreman, Toronto, has been appointed General Car Foreman, Winnipeg, vice T. G. Arm[illegible]

C. S. MAHARG, heretofore Superintendent [illegible] been appointed Superintendent, District 3, [illegible] Office, Brandon.

[illegible] man at Arcola, Sask., has been appointed [illegible]

R. WALKER has been appointed Loco[illegible]

J. C. PIKE, heretofore Travelling Passenger Agent, has been appointed chief clerk, District Passenger Agent's office, Regina, Sask.

A. G. BROOKER, heretofore Travelling Passenger Agent, Calgary, Alta., has been appointed Travelling Passenger Agent, Regina, Sask., vice J. C. Pike, transferred.

C. D. MACKINTOSH, A.M. Can. Soc. C.E., heretofore Engineer of Construction, Moose Jaw, Sask., has been appointed Division Engineer, Saskatchewan Division, vice T. Martin, transferred. Office, Moose Jaw.

T. MARTIN, heretofore Division Engineer, Saskatchewan Division, Moose Jaw, has been appointed Engineer of Construction, Sask., vice C. D. MacKintosh, transferred.

C. H. BALL, Winnipeg, is reported to have been appointed Chief of Special Service Department, Saskatchewan Division, Moose Jaw, vice H. Wunderling, transferred.

F. WALKER, heretofore Car Service Agent, Manitoba Division, Winnipeg, has been appointed Car Service Agent, Alberta Division, Calgary, vice F. T. Anderson, on leave.

E. HUMPHRYS, chief clerk to Superintendent of Motive Power, Western Lines, Winnipeg, has been appointed Fuel Agent, Calgary, Alta., vice A. Allan, at present on leave of absence, but who will, on his return, be assigned to other duties.

C. A. COTTERELL, heretofore Trainmaster, Vancouver, B.C., has been appointed Superintendent, District 2, British Columbia Division, vice G. E. Graham, resigned, as reported in our last issue. Office, Vancouver.

W. P. MARTIN, heretofore Wharf Agent, Vancouver, B.C., has been appointed Trainmaster in charge of Vancouver Terminals, with jurisdiction extending east to Cambridge St., vice C. A. Cotterell, promoted, as reported in our last issue.

J. ABRAMS has been appointed Wharf Agent at Vancouver, B.C., vice W. P. Martin, promoted.

H. WUNDERLING, heretofore Chief of Special Service Department, Saskatchewan Division, Moose Jaw, has been appointed to a similar position for the British Columbia Division. Office, Vancouver.

The position of Advertising Agent at London, Eng., formerly held by J. M. Gibbon, who has been appointed General Publicity Agent, Montreal, has been abolished, the duties formerly undertaken by him, now being conducted in the European Manager's office, with [illegible] C. Gill in charge.

Central Vermont Ry.—E. DESCHENES, [illegible] has been appointed Auditor, vice W. G. Crabbe, deceased. Office, St. Albans, Vt.

Grand Trunk Pacific Ry.—G. W. ROBB, heretofore Master Mechanic, has been appointed Superintendent of Motive Power, and the title of Master Mechanic has been abolished. Office, Transcona, Man.

D. W. HAY, heretofore Assistant Locomotive Foreman at Wainwright, Alta., has been appointed Locomotive Foreman at Redditt, Ont., vice A. J. Roberts, transferred.

C. E. BROOKS, heretofore Locomotive Foreman at Wainwright, Alta., has been appointed Locomotive Foreman at Edmonton, Alta., vice W. W. Yeager, transferred.

W. W. YEAGER, heretofore Locomotive Foreman at Edmonton, Alta., has been appointed Locomotive Foreman at Wainwright, Alta., vice C. E. Brooks, transferred.

A. J. ROBERTS, heretofore Locomotive Foreman at Redditt, Ont., has been appointed Locomotive Foreman at Edson, Alta., vice A. H. Mahan, transferred.

A. H. MAHAN, heretofore Locomotive Foreman at Edson, Alta., has been appointed Locomotive Foreman at McBride, B.C., vice A. McTavish, assigned to other duties.

The following agents have been appointed:—Barlow, Man., F. D. Livingstone; [illegible] Hill, Sask., A. G. Redford; Wakaw, Sask., J. H. Lewis; [illegible], Alta., F. S. Benyon; [illegible], Alta., D. C. McCready.

Grand Trunk Ry.—K. F. NYSTROM has been appointed Chief Draughtsman, Car Department, Montreal, vice A. Copony, appointed Master Car Builder, Western Lines, at Port Huron, Mich.

*T. CUSHING, heretofore Trainmaster, Richmond, Que., has been appointed Chief Dispatcher, Districts 6 and 7, Belleville Division, vice C. F. French, assigned to other duties.

C. F. FRENCH, heretofore Chief Dispatcher, Districts 6 and 7, Belleville Division, Belleville, Ont., has been appointed a dispatcher there.

The following agents have been appointed:—St. Lambert, Que., F. Crane; Howick, Que., J. E. Birtz; Newtonville, Ont., F. S. Allin; Pickering, Ont., P. C. Brown; Belle River, Ont., R. D. Ralston; Rock Lake, Ont., W. J. McCourt; Essex, Ont., outside, S. Sadler; Parry Sound, Ont., outside, H. P. Foot.

Intercolonial Ry.—J. C. FULMORE, Roadmaster, Halifax to Stellarton District, Truro, N.S., is reported to have been appointed Roadmaster, Sydney to Point Tupper District, at Sydney, N.S., vice W. P. Mills.

C. W. ARCHIBALD, Resident Engineer, Oxford to Sydney District, New Glasgow, N.S., is reported to have been appointed Roadmaster, Halifax to Stellarton District, at Truro, N.S., vice J. C. Fulmore, transferred.

A. H. SOMERS, Roadmaster, Point du Chene to St. John District, Moncton, N.B., is reported to have been transferred to the portion of the National Transcontinental Ry., between Moncton and Edmundston, N.B. which is being operated by the I.R.C.

T. McPHERSON, General Roadmaster, Moncton, N.B., is reported to have been appointed Roadmaster, Point du Chene to St. John District, Moncton, N.B., vice A. H. Somers, transferred.

G. COOPER, acting Roadmaster, Painsec Jct., N.B., to Truro, N.S., District, Moncton, N.B., is reported to have been appointed Roadmaster there.

See also Canadian Government Railways.

Lake Superior Corporation.—I. L. GODFREY, heretofore in Audit Department, Hocking Valley, Ry., Columbus, Ohio, has been appointed Comptroller, Algoma Central and Hudson Bay Ry., Algoma Eastern Ry., British America Express Co., Algoma Central Terminals, Ltd., Algoma Eastern Terminals, Ltd., Superior Rolling Stock Co., Cannelton Coal and Coke Co., Lake Superior Coal Co., International Transit Co., and Trans St. Marys Traction Co. Office, Sault Ste. Marie, Ont.

E. B. BARBER, heretofore Comptroller, Lake Superior Power Co., has been appointed Assistant Comptroller of the companies mentioned in the preceding paragraph. Office, Sault Ste. Marie, Ont.

Michigan Central Rd.—W. O. HOUSTON, heretofore Division Engineer, St. Thomas, Ont., has been appointed Division Engineer, Jackson, Mich., with jurisdiction over Grand Rapids, South Haven and Allegan Divisions, and main line from westerly limits of the Detroit Yards to easterly limits of Niles Yard.

S. D. WILLIAMS, Jr., heretofore acting Division Engineer, Niles, Mich., has been appointed Division Engineer, St. Thomas, Ont., vice W. O. Houston, transferred.

Northern Pacific Ry.—W. P. CLOUGH, heretofore Vice President, has been appointed Chairman of the Board. This is a new position.

J. M. HANNAFORD, heretofore Second Vice President, has been appointed President, [illegible], vice H. Elliott, resigned.

G. [illegible], heretofore Third Vice President, has been appointed Vice President, vice W. P. Clough.

Pere Marquette Rd.—D. CROMBIE, heretofore General Superintendent of Transportation, C.P.R., Montreal, has been appointed for special work in the General Manager's office, P.M.R., Detroit, Mich. No official position has as yet been assigned to him.

G. W. COOK, heretofore Machine Shop Foreman, has been appointed acting Shop Superintendent, St. Thomas, Ont., vice W. G. Griffith, Shop Superintendent, promoted.

J. WILSON, heretofore [illegible], has been appointed Foreman Blacksmith at St. Thomas, Ont., vice J. H. Tanner, who has left the service.

W. G. GRIFFITH, Shop Superintendent, St. Thomas, Ont., has been appointed Master Mechanic, Saginaw, Mich., vice S. A. Chamberlin.

Prince Edward Island Ry.—W. T. HUGGAN, heretofore Accountant and Auditor, has been appointed Divisional Accountant and District Passenger Agent. Office, Charlottetown.

L. S. Brown,
Superintendent, [illegible]
[illegible]

A. McDONALD, heretofore chief clerk to Superintendent, Charlottetown, has been appointed Division Freight Agent there.

See also Canadian Government Railways.

Canadian Locomotive Company's Annual Report.

The report for the year ended June 13 shows manufacturing profits for the year of $377,043.25, compared with $294,323.14 for 1912. The income from investment bonds was $19,842.77. The manufacturing profits and income from investments total $396,886.02, which has been disposed of as follows:—Bond interest, $90,000.00; preferred stock dividend, $105,000.00; adjustment of sundry accounts and loss on investment bonds sold, $12,623.82; transferred to reserve for depreciation, $50,000.00; transferred to reserve for special replacements, [illegible] balance to credit of profit and loss, $114,262.20.

[illegible] sent the output has reached 12 [illegible] tives a month.

The cost of additions to plant for the year amounts to $488,222.58, the funds for which have been provided by the sale of $335,244.39 of the company's investment bonds, and the balance has come out of cash from accumulated profits. Last year's report alluded to the difficulties of manufacturing whilst construction work was going on. Full efficiency from our plant cannot be expected until this work is completed.

[illegible] present, but it has been largely overcome by the erection of a block of workmen's houses by a company which the General Manager promoted.

Grand Trunk Railway Smoke Consumers.

The G.T.R. has been experimenting for some time with smoke consumers for application to locomotives, and has so far met with sufficient success to warrant the equipping of all the yard locomotives at Windsor, Ont., as well as a few others at different points on the system. The type used is very similar to the ones in use by railways in Chicago, where an anti smoke campaign has compelled the railways to use some device that will materially reduce the smoke. Along the side of the firebox, from 16 to 18 ins. above the fire, there are eight 2 in. tube openings through the water leg, 4 on each side. On the outside, back from the side sheet about 5 ins., are small steam jets, one for each opening, located in such a position that the jet at the point of entering the tube completely fills the latter, creating a strong draught, carrying in a volume of air over top of the fire. The brick arch in the front of the fire is built lower than usual, so that the air brought in through these side openings mixes thoroughly with the smoke in the firebox immediately after it is given off from the bed of coals. With a bright fire burning, the smoke is almost completely consumed. In a demonstration which the writer witnessed, several shovels of coal were thrown on a bright fire, resulting in dense smoke being given off. Turning on the steam through these side jets reduced the smoke almost instantaneously, so that the vapor given off at the stack was just slightly colored. The results of the experiments have been so successful that it is not at all unlikely the yard locomotives all over the system will be so equipped. The road locomotives may likewise be so equipped, but the advantages accruing are not considered to be as great as in yard locomotives, where the question of smoke in the atmosphere is of considerable importance to the community.

The G.T.R. is also experimenting with a circular blower in the stack, it consisting of a pipe hoop with holes in the upper side, so placed as to form a draught cone over the exhaust pipe. This is to replace the bent pipe construction heretofore in use. The draught given by the new type is very uniform.

Minneapolis, St. Paul and Sault Ste. Marie Railway Company's Annual Report.

Following are extracts from the report for the year ended June 30, of this company, which is a subsidiary of the C.P.R. The gross earnings, expenses, fixed charges and surplus income are shown in condensed form as follows:

[illegible]

The substantial increase in gross earnings, while partially due to the unusual grain crop of 1912, reflects also the growth and general prosperity of the northwest, including the Canadian northwest and the settlement of the territory adjacent to the company's lines. Three years since, the Soo Line built a line into the Cuyuna Iron Range, located in Aitkin and Crow Wing Counties, Minn. A dock was built at Superior, Wis., to handle ore from this range to lake vessels. The first shipments were made in 1912 and aggregated about 300,000 tons. This season's shipments will be approximately 1,000,000 tons, and next season, unless the iron industry is seriously disturbed, 3,000,000 tons are expected. It is doubtful if any iron range has shown a more rapid development.

The company has in course of construction [illegible] miles of additional main track extending from Ambrose, N.D., west, which will be completed in time to move this season's crop. Additional mileage at this time is not contemplated and will not be until improved financial conditions prevail, or the attitude of the public, as expressed through its various avenues of political activities, assures more reasonable treatment of transportation companies.

Construction of freight terminals in Chicago is progressing satisfactorily and will be completed by Jan. 1, 1914. Funds for the construction of this terminal were fully provided at the initiation of the project. The completed property will be equal, if not superior, to any freight terminal of its size in Chicago. During the year, at a cost of $240,000, this company acquired 2,400 shares of the Belt Ry. Co. of Chicago, thus placing it on a parity with the 12 other lines interested in that company. The Belt Ry. Co. operates extensive switching lines in Chicago. The advantages of thus securing direct connection with the numerous industries adjacent to the Belt Co.'s tracks are obvious.

The consistent growth of the company's business and the more rigid exactions of the public for improved facilities and safety devices require from year to year larger expenditures for additions and betterments to the property, expansion of its shop facilities and liberal additions to its equipment. Over $1,200,000 were expended during the year for additions and betterments. Extensive additions at the principal shops, located at Shoreham, are in progress.

By means of an equipment trust arrangement aggregating $3,806,657.19, issued Jan. 1, 1913, the equipment was increased to the extent of 25 locomotives, 49 steel passenger cars of various classes, 1,700 freight cars, 300 ore cars, 20 caboose cars and 200 ballast cars. In accordance with the company's well established policy, its property and equipment has been maintained to yield its full working efficiency.

General conditions which obtain throughout the northwest at this time seem to assure a satisfactory tonnage during the current year.

Lake Superior Corporation's Annual Report.

Following are extracts from the report for the year ended June 30:—From the operations of all of the subsidiary companies, subject to deductions, $2,514,221.31. Following are the deductions:—Interest on bonds of subsidiary companies, and on bank

[illegible]

and other advances, etc., $1,101,825.45; amounts set aside for sinking fund payments, etc., $102,511.64; paid to Lake Superior Corporation by subsidiary companies as interest on bonds and advances, and as dividends on stocks held by it, $793,148.31; balance of profits undistributed carried forward, $516,735.91. The volume of business has been fully maintained, and in view of the results of the year's operations, and of the continued satisfactory outlook, your directors feel warranted in again paying the full interest on the income bonds for the year.

ALGOMA STEEL CORPORATION.—The mills have been in continuous operation throughout the year. The output as compared with the preceding year is as follows:—

	1911-12.	1912-13.
Pig iron	[illegible] tons	[illegible] tons
Steel rails	[illegible] "	[illegible] "
Merchant mill material	39,4[illegible] "	[illegible] "

The production of pig iron and steel rails is the largest yet attained. The blast furnaces have produced in excess of expectations. In the early part of the year the rail and blooming mills were closed down for two weeks to permit of the installation of blooming and rail mills of greater capacity. This work was satisfactorily accomplished within the time indicated, and the result has been a largely increased production of steel rails. It is estimated that with further slight improvements, which are in hand, the production next year will rise to 1,200 tons of rails per day. Owing to the necessity for diverting most of the steel made to the rail mill, the operation of the merchant mills has been confined to railway material.

ALGOMA CENTRAL AND HUDSON BAY Ry.—Your directors have again to intimate increased earnings for the year. Since the last report the railway has been completed to its connection with the C.P.R., and there are now in operation 195.3 miles, in addition to the Michipicoten and Magpie branches. There is under construction the railway northward from the C.P.R. to the National Transcontinental Ry., an additional 101 miles. Grading on this section has been completed, all track laid, and 59 miles have been partially ballasted. The entire construction should be finished, and the railway ready for operation by the end of the year, when the total main line mileage will be 296.3 miles, with branch lines 37.40, making altogether 333.7 miles. The Algoma Central Ry., when completed, will connect with the Canadian Pacific, Canadian Northern and National Transcontinental Railways. These connections should prove to be of very great benefit to the company. To ensure still further the success of the operations, and to secure independence in the matter of freight rates, the company has purchased two steamers, each of 5,500 tons capacity, for the purpose of ore carrying, and from these very satisfactory results are now being obtained. During the year funds were also provided through a subsidiary company—Algoma Central Terminals, Ltd.—to provide the railway with complete terminal facilities. At Sault Ste. Marie new yards, round house and repair shops of the most modern type have been built, and a coal dock of 100,000 tons capacity a year is in course of construction.

ALGOMA EASTERN RY.—The results as compared with the preceding year show an improvement. Full benefit cannot be derived until this railway is completed and the whole line in operation. The work has been finished with the exception of the swing bridge at Little Current, the completion of which has been delayed on account of non delivery of the structural steel, but the company has a definite promise from the contractors that the bridge will be finished by the end of October. Full provision has been made in the matter of equipping this railway with all terminal facilities and docks at Little Current. The work in connection with these is still under way, and the coal dock in particular will be in readiness for the opening of navigation next year. It is expected that considerable business will be handled over this dock in view of the large coal consumption of the nickel and paper industries in the neighborhood.

INTERNATIONAL TRANSIT CO.; Trans St. Mary's Traction Co.—Both companies report that their earnings have been maintained. Within recent months the International Transit Co. has extended its lines to Bellevue Park. This park has just been opened by the city of Sault Ste. Marie, and should prove a source of increased revenue to the company.

GENERAL.—Throughout the year the corporation has continued its policy of assisting each subsidiary company to develop and strengthen its resources, and in pursuance of this policy the Algoma Steel Corporation has been enabled to acquire a large Pocohontas coal property, which is now operating through the Lake Superior Coal Co. As the Steel Corporation uses equal quantities of Pocohontas and Cannelton coal for coking purposes, and as it already owns and operates the Cannelton Coal and Coke Co., it now has all it requires so far as this particular raw material is concerned.

The necessity of developing the steel plant so as to keep pace with the increasing demand consequent upon the growth of Canada is being kept in view.

London St. Ry.—Gross earnings for August, $28,962.45; expenses $19,661.15; net earnings $9,301.30; deductions $2,450; net income $6,851.30, against $27,551.52 gross earnings; $18,071.52 expenses; $9,480 net earnings; $2,450 deductions; $7,030 net income, for August, 1912. Aggregate gross earnings for eight months ended Aug. 31, $216,802.44; expenses $154,504.95; net earnings $62,072.49; deductions $19,426.84; net income $42,645.65, against $197,565.29 aggregate gross earnings; $138,285.20 expenses; $59,280.09 net earnings; $19,268.50 deductions; $40,011.59 net income, for same period 1912.

Government Grain Elevators in Western Canada.—The Dominion Government has awarded contracts for the construction of one grain elevator at Moose Jaw, Sask., and one at Saskatoon, Sask., to Barnett, McQueen Co., Fort William, Ont., for the total sum of $2,005,620. The capacity of each elevator will be about 3,000,000 bush., but they will be so constructed that additional units may be built as they are required.

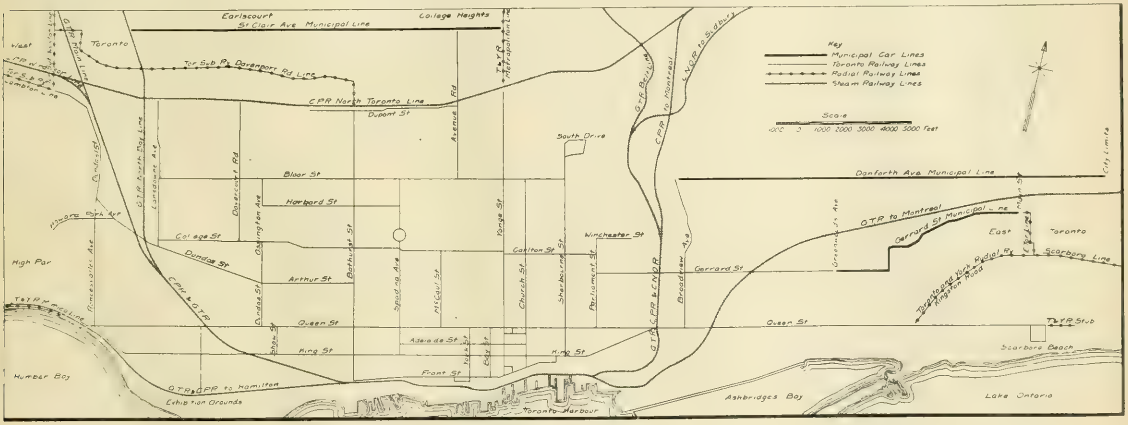
A highway tunnel, planned to be built by the city of Venice, in Italy, will be 11,800 ft. long and will be the largest of its kind. It is to connect the city with the islands Gindicca, San Giorgo and Lido, thus establishing better transportation facilities than are afforded by gondolas.

Electric Railway Department.

Toronto Civic Electric Car Lines.

The Toronto Ry. Co. having decided not to build additional car lines in the outlying districts of Toronto as requested by the city council the city exercised the perogative vested in it by the agreement with the company, to build such lines as it required when the company holding the franchise failed to do so when petitioned. Three such lines were projected in 1910, the city taking up active work on the projects in that year. Of these lines, the Gerrard St. one has been in operation since last autumn, the St. Clair Ave. one was put in operation at the end of August, the Danforth Ave. one is expected to be completed shortly. They are all of the Toronto Ry. gauge of 4 ft. 10⅞ ins.

The Gerrard St. line was the first one completed and put in operation. It extends from the terminus of the Toronto Ry's. Parliament St. line at Greenwoods Ave., along Gerrard St., up Coxwell Ave. to negotiate a jog in Gerrard St., thence along the latter street, terminating at Main St. in the former town of East Toronto, which is now a part of city ward 1, a total distance of 1.85 mile.



Electric Street and Radial and Steam Railway Lines in Toronto, Showing the New Municipal Lines.

The Danforth Ave. line serves the same route as the Gerrard St. line, about ½ mile further to the north. This line extends from the terminus of the Toronto Ry's. Broadview Ave. line at the corner of Broadview and Danforth Avenues straight along Danforth Ave. to the east city limits, in the former town of East Toronto, a total distance of 3.5 miles. This line will, in addition to serving the northerly portions of East Toronto, serve the growing portion of the city northwest of the terminus of the present Broadview line, a distance heretofore unserved by any transportation facilities.

The St. Clair Ave. line runs due west along St. Clair Ave. from Yonge St., the main street of the city, to the tracks of the G.T.R. North Bay line, a total distance of 3.35 miles. At the Yonge St. terminus, the line is 2¾ miles north of the corner of King and Yonge Sts. The Toronto Ry's. Yonge St. line terminates at the C.P.R's. North Toronto line, about ½ mile south of the Yonge St. terminus of the civic line. On Yonge St. north of the C.P.R. tracks the single track standard gauge Metropolitan division of the Toronto and York Radial Ry. is operated. The only line of the T.R. Co. north of the C.P.R. is the Avenue Road line, which extends to St. Clair Ave. on Avenue Rd., which is about half a mile west of Yonge St. This will probably be the main point of juncture, as by the other route, there will be two transfers and three fares. The St. Clair Ave. line will serve the two rapidly growing settlements of College Heights and Earlscourt, the former now depending entirely on the Avenue Road line, and the latter on the Bathurst St. line, which is about three quarters of a mile from the centre of the settlement.

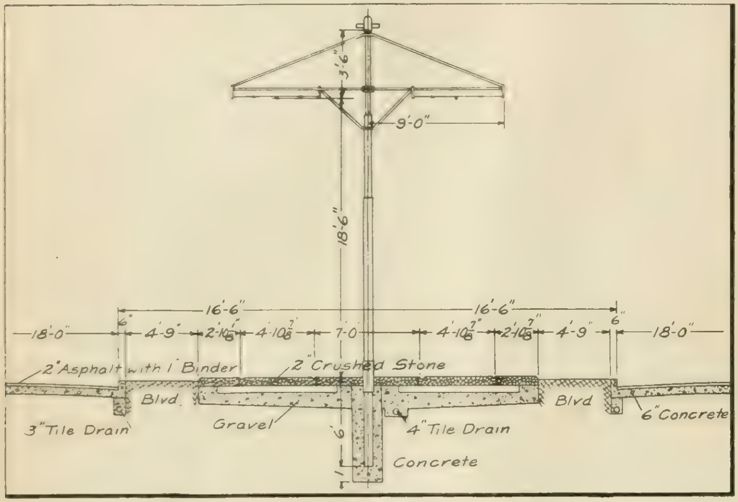
The Gerrard St. line follows a 66 ft. highway its full length, which allows for the normal spacing of the double track lines at 10 ft. 2⅞ in. centres. The substructure work of this line consists of a 12 in. depth of solid concrete, flush with the top of the ties, which are placed at 6 ft. centres, with short 2 ft. sections of ties embedded in the concrete at 2 ft. centres intervening, tie rods being used at intermediate points. Over this base of concrete and ties, there is a layer of sand cushioning, on which are placed granite sets, the full width of the track allowance of 19 ft. This line is laid with 7 in., 80 lb. T rail, Lorain section 335.

The Danforth Ave. line is somewhat similar to the Gerrard St. line, except that the street allowance is 86 ft., but the track allowance of 18 ft. is the same. The substructure work consists of a layer of not less than 6 ins. of concrete, with the ties at a 2 ft. spacing resting on a 2½ in. cushion of 1 in. crushed stone, packed under the ties only. The packed up ties are embedded in concrete and the base of the rail covered over with mortar to a depth of 2 ins. with a ½in. sand and cement cushion over top, on which is laid the pavement of creosoted wood blocks. This line uses 7 in., 90 lb. grooved girder rails of Lorain 392 section, with ⅞ in. rods at 6 ft. centres.

The construction of the St. Clair Ave. line is different from the other two, from the location of the double tracks with regard to the street. At the time the civic line on this street was projected, it was decided by the council that in view of the fact that St. Clair Ave. was one of the few through crosstown streets in the city, it would be advisable to anticipate future requirements by increasing the width beyond that of the standard 66 ft. street., making the increased width greater than that of Danforth Ave., which was increased to 86 ft. From the fact that the section from Yonge St. to Avenue Road was well built up and would involve heavy property damages, it was decided to make that portion of the avenue only 86 ft. wide, and the balance from Avenue Road to the G.T.R. tracks 100 ft., with a central 33 ft. boulevard, on which the trolley line should run, on each side of which will be a 24 ft. roadway. Each of the cross streets has a 24 ft. allowance across the boulevard. The substructure of the line is similar to that on interurban lines. On a gravel bed, the ties at 2 ft. centres are bedded, with rails similar to the Gerrard St. line, i.e., 7 in., 80 lbs. T rails, Lorain 335 section. Between the rails and on each side, the space is filled with 2 in. crushed stone. The construction of the line at the street crossings is similar to the construction of the Gerrard St. line.

The track work and overhead construction of all the lines is very similar. Brazed copper ribbon is used for the bonding, the work being done by the Toronto Ry. Co. for the city. On the Gerrard St. and Danforth Ave. lines, the overhead work is supported on the one side of the street by the municipal hydro electric system's street lighting poles, while the other side uses the standard steel trolley poles. The trolley wire in all the lines is 2.0 hard drawn copper wire. The trolley suspension of the boulevard section of the St. Clair Ave. line is of the central type, with 22 ft. steel poles carrying an 18 ft. cross arm, from which the trolley wire is suspended. This central pole is bedded to a depth of 6 ft. in concrete, and at the ground level, there is a 3 ft. section of tube, projecting a foot above the ground, swedged to the pole to strengthen that portion.

On the Gerrard St. line, leaving the Greenwoods Ave. end, there is a practically level track for about half a mile, beyond which the line commences an ascent on a grade averaging about 2.5% the greater portion of a mile, with a final steep ascent of 4.2% to the higher level entering East Toronto, the terminus of the line. Several curves are encountered, but with the exception of the two corner turns, these are negligible. On the Danforth Ave. line, the gradients are very light, the heaviest being a short section of about a quarter of a mile, where there is an ascending grade from the west of 0.9%, changing through a vertical curve to a 3.0% ascent, dropping off finally to an approximately level stretch the balance of the way. There are no curves on the line. The profile of the St. Clair line is undulating in its character, both ends of the line being at practically the same elevation, whereas the other two lines follow an ascending course. The major portion of the gradients on the St. Clair Ave. line are in the neighborhood of 1.0%, with a maximum short stretch of 3.8%. The majority of the steeper gradients have been eliminated on this line by heavy grading.



Substructure of the St. Clair Avenue Municipal Car Line.

Electrical energy is to be obtained from the Toronto Hydro Electric System, from the several substations most conveniently located to each line. The Gerrard St. line receives power from the East Toronto pumping station on Gerrard St., about 1,500 ft. beyond the end of the railway line. From there to the end of the line, there is a feeder and return line, each 350,000 c.m. The feeder line parallels the railway line to within 1,400 ft. of the city end of the line. The power question for the Danforth Ave. line has not as yet been settled. The St. Clair Ave. line receives its power from the substation on Macpherson Ave. near Avenue Road, a feeder and return, each 500,000 c.m. leading along Macpherson Ave. and up Spadina Road to the line, the feeder extending in each direction from this point.

Along the several lines, the St. Clair Ave. line particularly, there has been some heavy cut and fill work to eliminate grades. On the St. Clair Ave. line, two ravines have been negotiated. All this work, where heaviest, has been carried out in approved railway line methods with steam shovel and dump cars hauled by a dinky engine. In one of the St. Clair Ave. fills, the original plans called for a large concrete culvert, which collapsed and has been replaced by a plate girder bridge over the central part of the fill, the centre span being 100 ft., with two 40 ft. approach spans. The bridge width is 86 ft. This bridge is midway between Spadina Rd. and Bathurst St., near the centre of the line, and will allow of a ravine drive being carried under St. Clair Ave.

There are several small culverts. The Gerrard St. line has two flat top concrete culverts, 2½ ft. square. On the Danforth Ave. line, there are about 6 small corrugated iron pipe culverts under small fills. On the St. Clair Ave. line, there is a 3 by 4 ft. cedar box culvert, and one 6 ft. square flat top concrete culvert.

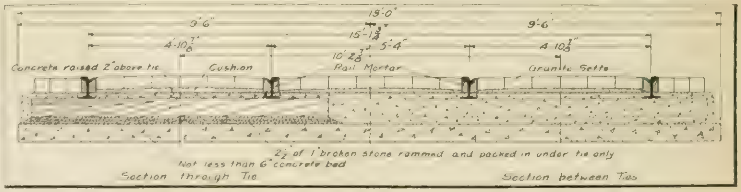
The facilities for handling the equipment are very limited as yet, as the operation of the lines has only recently commenced. The only shed is a small sheet metal shed, of very light construction, on the Gerrard St. line, near its east end, where the four cars operated on that line are stored.

To facilitate the construction work, each of the three lines had its own separate storage yard adjacent to the nearest steam railway line. For the Gerrard St. line, a strip of the G.T.R. right of way a short distance to the west of York station was acquired by the city, and running rights obtained for a narrow gauge line from this yard to the line under construction. For the Danforth Ave. line, a piece of private property on Coxwell Ave., on the north side of the G.T.R. main line, was acquired for the yards. For the St. Clair Ave. line, Station St. at the extreme west end of the line was closed by the city, forming a yard on the east side of the G.T.R. North Bay line.

The cars on the civic car lines are all of the pay as you enter and double end control type, and were built in the United States. The four cars on the Gerrard St. line are 45 ft. long, weighing 46,000 lbs., having a seating capacity for 40. The central seats are cross, with the end ones lengthwise. The cars for the St. Clair Ave. line, 20 in all, are being delivered to the city, and are being assembled as fast as they arrive from the builders. These cars are similar in most particulars to those on the Gerrard St. line, except that the seating capacity is increased to 48, there being 8 cross seats and 4 longitudinal seats at the ends. These cars are mounted on two 11 ton Baldwin trucks, on each of which are two GE 80 railway motors. The controllers are SGE K 28B. Turtle back construction is followed in the car design, and they use straight air control with a GE type CP 27 electrically operated compressor unit. On each end of the cars there is a 6 ft. platform with entrance and exit railing, both vestibules being completely enclosed. The front exit door is operated by a lever in front of the motorman, and the rear entrance and exit doors from double levers in front of the conductor, adjoining his fare box stand. A portable fare box is employed. The opening of each door drops a step, and at the same time an electric light under the vestibule back of the step is lighted in night operation. The new cars for the Danforth Ave. line are to be similar in all particulars to the ones for the St. Clair Ave. line.

The work on these lines has been carried out by the City Works Department, R. C. Harris, Works Commissioner. The design and general supervision of the work came under the charges of E. L. Cousins, now Chief Engineer of the Toronto Harbor Commission, succeeded by C. W. Power, Engineer of Railways and Bridges, while the actual construction work was supervised by A. E. K. Bunnell, succeeded by D. W. Harvey, Assistant Engineer of Railways and Bridges.

The Canadian Autobus Co., which is preparing to operate a service of autobusses in Montreal, is working in conjunction with the London General Autobus Co., London, Eng. G. Poloquin, representing the British company, has arrived in Montreal to arrange for the operation of the first consignment of vehicles for the new service. Duncan McDonald, Montreal, is in London, Eng., looking after the shipment of the buses. It is stated that 350 of these vehicles are being built by the London General Autobus Co., for the Canadian Autobus Co., and that 150 are ready for shipment.



Substructure of the Danforth Avenue Municipal Car Line.

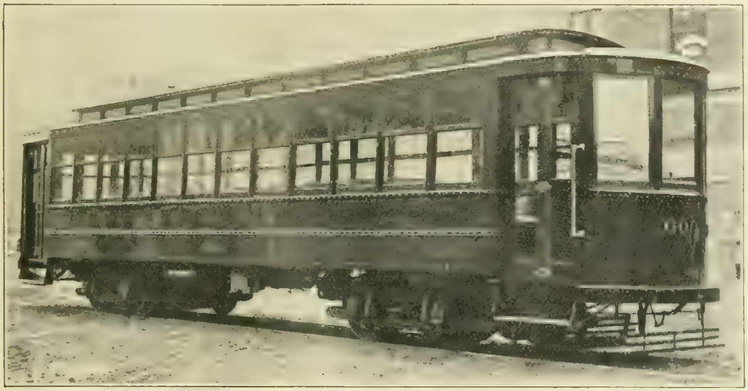
Trolley Traffic in Great Britain.—Board of Trade statistics show that during 1912 the trolley lines of Great Britain carried over three billion passengers. Figures such as this give an impressive sense of the magnitude of modern railway facilities, and the statistics are the more remarkable when it is remembered that this traffic was carried on 2,642 miles of track and in less than 13,000 cars. Significant, also, is the fact that whereas in 1900 there were 37,000 horses employed in hauling street cars, in 1912 there were only 1,500.

Ottawa's Electric Railway Company's New Cars.

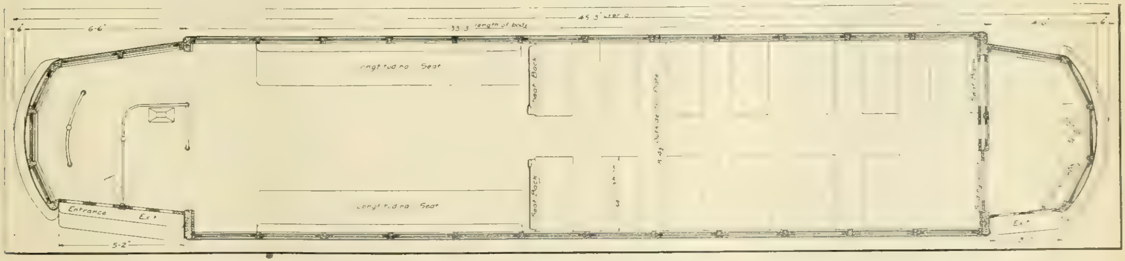
The Ottawa Electric Railway has recently added to its equipment 20 double truck steel cars, with the following general dimensions:

Length over bulkheads	33¼ ft.
Length of front vestibule	4½ ft.
Length of rear vestibule	6½ ft.
Projection of bunters	6 ins.
Total length over bunters	45¼ ft.
Width of body over rubbing strips	8½ ft.
Seating capacity	42 persons.

Construction of body:—The side girder plates are 18 by ¼ in. steel in one piece full length of body, each reinforced at bottom edge with 5 by 3 by ⅜ in. angle, and at top edge with a double beaded bar, which also serves as a rubbing strip. Belt rails are of ⅜ by 2 in. round bevel edge steel bar with pressed steel shoe on which window sash rest. Side posts are faced with 2½ by 3-16 in. steel plates, which are anchored by gusset plates and rivets to top edge of side girder plates. Window head strip or letter board is also of steel 5 by ⅛ in., reinforced at top edge with angle steel 1½ by 1¼ by 3-16 in., and all together is rivetted to the top end of steel post facings. Corner posts are formed up from steel plate 3-16 in. thick. The roof is of wood construction sheeted with ½ in. T. & G. lumber and covered with canvas.



Ottawa Electric Railway Car.



Floor Plan, Ottawa Electric Railway Cars.

The interior finish throughout is of cherry, finished natural color. Seats are of stationary type upholstered in rattan. Curtains are of pantasote material with tin barrel shade rollers and pinch handle fixtures. The trucks are no. 27-FE-1 standard gauge 4 ft. 10 in. wheel base with 4½ in. hot rolled steel axles and 33 in. chilled iron wheels. Motor equipments are quadruple no. 101-B-2 motors with K-35 controller. Air brakes are Westinghouse schedule no. S.M.E. The cars are equipped with H.B. life guards, Consolidated Car Heating and Lighting Co. buzzer signaling systems, and electric heaters and Coleman Fare Box Co.'s stationary p.a.y.e. fare boxes.

It is said that for appearance, as well as for public accommodation, these cars are second to none in their class. They were built by the Ottawa Car Co., Ltd.

Double Deck Cars for Pittsburgh, Pa.

About a year ago, considerable interest was shown in the electric railway field by the introduction of the first double deck street car used on the American continent within recent years for handling city traffic. In most particulars, it differed widely from the conventional design to be found in many places abroad. This original double deck car has been improved upon, so that today, it may be considered to have passed beyond the experimental stages, as several cars of this type were built, and observations of their performances taken under actual service conditions, so that enough data were collected to make possible the construction of a double deck car that could be relied upon to fulfill the desired conditions without any points of failure such as occurred in the original designs.

The Pittsburgh Railways have recently placed in service a double deck car that has been so carefully planned on the data obtained that it appears to meet most requirements, in expeditiously handling dense crowds. The overall length of this is 47 ft. 2 ins., with a width of 7 ft. 10 ins. The car is constructed throughout of steel, and is mounted on trucks of a design that was developed some time ago by the Pittsburgh Railways, and which evoked considerable interest at the time of their first appearance on account of the small size of the wheels, making possible the low setting of the lower deck, which in the case of this double deck car is 28¾ ins. above the rail. These trucks are placed 22 ft. 2 ins. centres. The overall height is 13 ft. 8 ins.

Both entrance and exit are located at the centre, and as the cars of this line are for double end operation, the door arrangement is duplicated on each side of the car. The entrance and exit doors on each side are separated by 7 ft., the object being to avoid confusion at that focal point. The central part of the car is low set, the step into the car being only 13¼ ins. above the ground, followed by a slight ramp of 1½ ins., a step of 12 ins., followed by a 2 in. ramp leading into the ends of the car where cross seats are located in the usual manner. The very end of the rear portion of the car has a curved seat, adding to the seating capacity. Entrance to the car is through the rear one of the side doors, and exit through the front one. At the centre of the car inside the entrance way is the conductor's stand, with the usual p.a.y.e. equipment. Beyond the conductor, along the inner side of the car, and leading backwards, is the stair to the upper deck. The seats in this upper deck are located along the centre, back to back, the under side of the seat forming the head room for the lower deck centre aisle, the seating headway in the lower deck being reduced by the depth of the aisles of the upper deck. From the duplicate operation construction, there are two stairs, the one along the outside of the car being for exit, and vice versa, when operating in the other direction. The only push buttons on the upper deck are at the head of the stairs, so that the passenger must be prepared to descend before giving the signal, thereby not delaying the car, as from that point the conductor can observe the party descending.

Head room is economized to the utmost. The trolley harp is located in a depression in the roof, giving greater head room along the side passage ways.

The total seating capacity is 110, 56 up and 54 below, which with a total weight of car equipped of 38,700 lbs., gives the remarkably low dead weight per passenger of 352 lbs.

Economy of Storage Battery Cars.—The Prussian State Railways, after an experience of many years in the use of storage battery cars have found that, without making any radical changes in the standard railway cars, storage battery propulsion may be applied successfully in respect of both operation and economy. The cost of operating the 200 cars of this type on these railways is reported to work out at only 1.75 cents per horse power per hour.

The Montreal and Southern Counties Ry, has equipped 10 of its cars with Tomlinson automatic air connecting couplers, manufactured by the Ohio Brass Co., for use on four car multiple unit control trains.

Answers to Questions on Electric Railway Topics.

Following are answers to questions in the American Electric Railway Association's question box sent in by officials of Canadian railways. In this lot all the answers are supplied by two of the Toronto Ry.'s staff:—

Single End Operation.—Does single end operation result in more wear on motors, trucks and wheels than double end, and if so, is the item sufficiently large to be taken into consideration in the installation of this method of operation?

W. R. McRae, Master Mechanic, Toronto Ry.—"Several hundred cars on this property are single end operated. There is no excessive wear on any part of the equipment, with this method of operation, where the cost of renewal or reversal of worn parts is not more than compensated for by the lesser number of parts required. Where it is possible to loop and Y cars at route terminals, I strongly recommend single end operation."

Drying Armatures and fields.—When armatures and fields become wet or damp, what is the cheapest effective way of drying them?

W. R. McRae, Master Mechanic, Toronto Ry.—"By drying in an electrically heated oven."

Sliding doors in interurban cars.—What is the most satisfactory an deconomival arrangement for a single sliding door, located between ladies' compartment and rear vestibule, or between ladies' compartment and smoker, in large interurban cars, so as to keep door either open or shut as the case may be, to avoid door sliding back and forth and slamming if car strikes curve or should lean to one side. The arrangement we desire is to be entirely automatic, and so arranged that no lock or latch is to be used, and such that door will not open or close too hard or tight, or too easy and loose.

W. R. McRae, Master Mechanic, Toronto Ry.—"The most satisfactory and economical arrangement for keeping a sliding door either open or closed is to recess the track at both ends to permit of roller dropping into recess sufficiently deep to prevent door moving on curves or turn outs."

Fare Registers and Fare Boxes.—When conductors are transferred from one car to another during their trick of duty, is it good practice to permit them to take the register with them, or is it better to keep the register on the car? In other words, should the register follow the car or the conductor?

F. L. Hubbard, Assistant to General Manager, Toronto Ry.—"We do not use a register, all the fares being collected by the conductor with a portable hand box. The box always follows the conductor, no matter where he goes."

Headlights.—What size incandescent lamp should be used in headlights for city service?

W. R. McRae, Master Mechanic, Toronto Ry.—"Sixteen candle power with white enamel reflectors and bull's eye lense."

Car Cleaning.—How can cars be best cleaned and kept clean? Is the vacuum process too costly for medium sized roads?

W. R. McRae, Master Mechanic, Toronto Ry.—"If varnish and color is in good condition, wash and chamois well. Use a good car cleaner. Clean car frequently. Vacuum process is not costly. Use compressed air from car compressor for both blowing out dust and vacuum cleaning."

Conductors' Deposits.—Is it proper practice to require a deposit from conductors before they are put to work, and if so, what is a proper deposit?

F. L. Hubbard, Assistant to General Manager, Toronto Ry.—"When a student conductor enters training he is required to furnish $10 with which to purchase tickets and to make change, also a uniform cap which costs $1.25, and he is not paid any wages during his training. When he is put at regular work the company furnishes him with $25, ticket and change money. We do not require a deposit and the only protection we have is the amount of money due a man for a period of five or six days while the pay is being made up. We have not had any abuse of this system. We do find, however, that desirable men, particularly married men, are deterred from entering the service because of the $10 and cap money they have to provide during training, and the fact that they receive no wages during that time. We prefer married men and it is significant that the percentage of married men accepted for motormen is nearly double that for conductors, which we believe is largely due to the fact that they are not required to put up any money during training period. We are seriously considering whether we should take a chance and furnish conductors in training with the $10 ticket and change money, with the probability that any abuse of the system would be more than off set by the better class of men we could obtain for the service."

Carnivals, etc.—Should carnivals and other large gatherings be encouraged by railway companies in view of the increased damage charges they bring about?

F. L. Hubbard, Assistant to General Manager, Toronto Ry.—"If this question means whether a company should offer inducements to secure carnivals, as a city company we do not think it should be done."

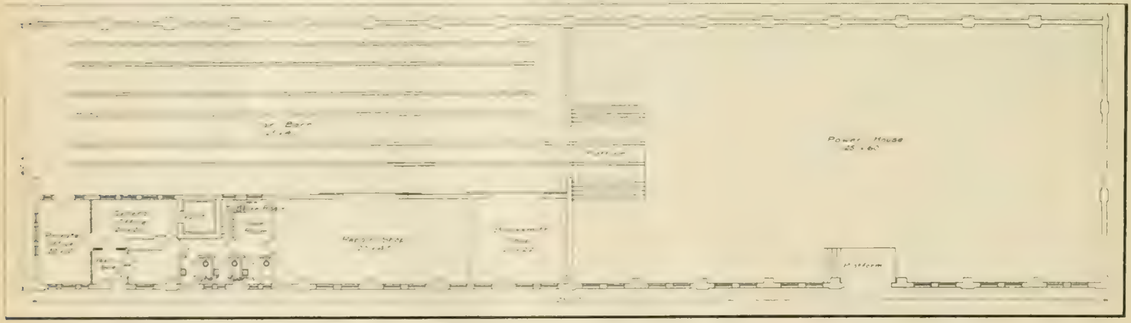
Moose Jaw Electric Railway Car Shops.

The accompanying plan shows part of the layout of the car shops at Moose Jaw, Sask., but does not give the complete layout, omitting a 5 track car barn addition, 125 ft. long, for storage, which has been added this year.

The buildings are of steel, brick and concrete construction throughout. The foundations are all of concrete, on which are built the brick walls, with the roof trussed by steel girders spanning the 62½ ft. width of the shop, these trusses being located at 15 ft. 5⅜ in. centres through the length of the shop. The roof members are composed of 8 in. I beams resting on the trusses.

The front portion of the building contains on one side the offices, the private office 20 by 12 ft., and the general office 20 ft. square. To the rear of these is the vault, cloak room and lavatories, all forming with the offices one main division of the building. To the rear of this section is the repair shop, 20 by 45 ft., connecting with the car barn by wide opening, with sliding fire doors. To the rear of the repair shop is the blacksmith shop. The repair shop has a 2 in. plank floor, but the blacksmith shop is concrete. Alongside these several divisions of the shop is the car barn section, 125 by 40 ft., containing three repair tracks. These tracks have a pit construction beneath, the tracks being supported on 8 by 10 in. beams on 8 in. square supports. Between top of rail and floor of pit, there is 4¾ ft. The clear height in this and the other shops is 20 ft. The store room for the shops is in a room over top of the offices, and approached by stairs in the cloak room. The heating of the shop rooms and offices is by means of two hot air ducts from the power house to the rear, one pipe running along each side wall of the car barn, with connections into the pit. Into the offices and other side rooms there are risers with deflecting heads. The pits contain catch basins for the draining off of the car barn section, the tile pipe running under the shop connecting with the external system.

The power house in the 125 by 60 ft. section of the building to the rear, contains three Diesel oil engines. The two smaller units are each of 204 brake horse power, direct connected to Westinghouse 600 volt railway generators. The third unit is of 500 brake horse power, connected with a 600 volt interpole machine, which is connected up by means of a flexible coupling. The power house and its whole equipment were described in Canadian Railway and Marine World for June, 1912.

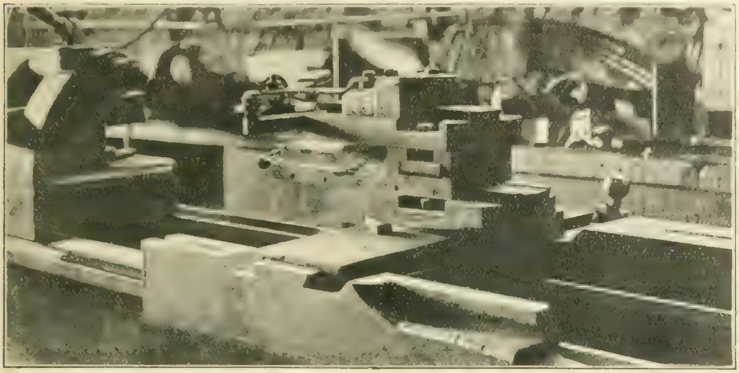


Layout of Moose Jaw Electric Railway Shops.

The operation of electric cars between Winnipeg and Selkirk, Man., on Sundays, was started Sept. 7.

Slotting Commutators at the Niagara, St. Catharines and Toronto Railway Shops.

The unequal wear of copper and mica insulation in electric commutators is one of the most fruitful causes of the shopping of cars. The hard mica, not wearing as rapidly as the copper segments, causes the latter to form a series of grooves, over which the brushes jump, giving rise to a great deal of sparking when the wear is at all noticeable. Arrangements for the removal of this surplus mica are made in nearly all shops, and as there appears to be no special tool in general use, local ingenuity is applied in making up such an appliance.


Lathe Attachment for Slotting Mica Fins from Commutators.

The device in use at the N. St. C. & T. Ry. shops, at St. Catharines, Ont., W. Pay, Master Mechanic, resembles in some particulars the special device in use at the Winnipeg Electric Ry. shops, described in these columns recently, the principal difference being that the N.St. C. & T.R. device can be applied to an engine lathe, and is not a separate and complete machine in itself.

As the accompanying illustration indicates, the slotting device consists of a small carriage attached to the lathe carriage on the tool head. The upper carriage is operated by the handle shown to the rear, which carries, back and forth, parallel to the centre line of the lathe, the narrow tool clamped to the top surface of this carriage. The armature to be slotted is placed between centres, the cutting tool moved up to operating position, and moved back and forth, the armature being revolved the necessary amount between cuts.

Quebec Railway, Light, Heat and Power Company's Annual Meeting.

At the annual meeting at Montreal, Sept. 9, the report for the year ended June 30 was presented by the President, Sir Rodolphe Forget. The gross earnings from operation were $1,524,200, compared with $1,415,825 in 1912, which after adding miscellaneous income $236,881, makes a total revenue from all sources of $1,761,082, an increase of $150,672 over the previous year. The operating and maintenance expenses were $895,180.61 against $734,925.35. Fixed charges and taxes were $792,100, leaving a net surplus of $73,881, which added to the surplus from last year's accounts makes a total surplus of $147,341. Subsidies received from the Dominion Government amounted to $27,641.60, and were applied to the cancellation of $30,000 bonds according to the trust agreement.

The President stated that $91,500 had been expended on maintenance during the year and that the various properties had been maintained at a high state of efficiency.

Questions by shareholders as to the state of the company's bonds, elicited the statement, that the original $10,000,000 bond issue of the Quebec Ry. proper, was secured by all the assets of the company, exclusive of the Quebec and Saguenay Ry., while the bonds issued against the latter have set apart for them the stock, bonds and other properties of the new line.

A revision of the bylaws was authorized, reducing the number of directors from nine to six, Hon. J. P. B. Casgrain, L. C. Marcoux and O. B. d'Aoust retiring.

The following board was elected for the current year,—President, Sir Rodolphe Forget; Vice President, L. C. Webster; other directors, J. N. Greenshields, Hon. Robert Mackay, P. Galibert and D. O. L'Esperance.

Chatham, Wallaceburg and Lake Erie Railway Secured by Mackenzie-Mann Interests.

During the past two years or more there have been continual reports that the Mackenzie, Mann & Co. interests had secured control of the Chatham, Wallaceburg and Lake Erie Ry. The most recent report to this effect received full conformation at the annual meeting of the shareholders at Chatham, Ont., Sept. 3, when the following were elected directors:—D. B. Hanna, A. J. Mitchell, R. G. O. Thomson, F. H. Phippen, K.C., Toronto; D. A. Gordon, Wallaceburg; J. G. Kerr, Chatham. The new directors are with the exception of the Chatham and Wallaceburg representatives, connected with Mackenzie, Mann & Co. D. A. Gordon, who is M.P., for East Kent, has been president of the company for some time.

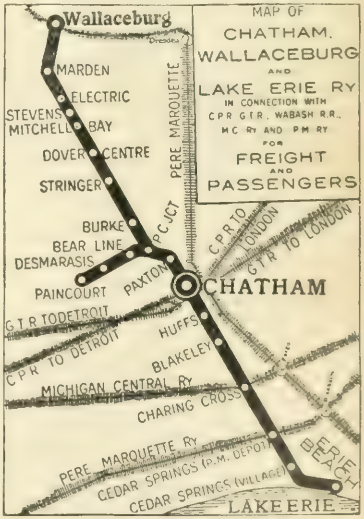
The Chatham, Wallaceburg and Lake Erie Ry. Co. as incorporated by the Dominion Parliament in 1903, to build a railway from Chatham to Wallaceburg; from Wallaceburg to Petrolea; from Chatham to near Rondeau; with branch lines to Dresden, and Blenheim, Ont. The first section of the line to be completed was from Chatham to Wallaceburg, and this was opened for traffic, Nov. 20, 1905. The section from Chatham to Lake Erie was completed in 1908, and with the completion of the subway in Chatham, through traffic between Wallaceburg and Lake Erie was inagurated, Aug. 20, 1908. The branch to Paincourt was built in 1909.

The C.W. and L.E. Ry. extends from Chatham to Wallaceburg, 18.44 miles; Chatham to Erie Beach, 11.11 [illegible] from Paincourt Jct. to Paincourt, [illegible] altogether [illegible] of sidings and turnouts. The line gives connection with the C.P.R. and the G.T.R. at Chatham, with the Michigan Central Rd. at Charing Cross, and with the Pere Marquette Rd. at Cedar Springs, Chatham and Wallaceburg.

The company owned at June 30, 1912, 7 closed and 2 open passenger cars, [illegible] cars and 3 miscellaneous cars. For the year ended June 30, 1912, its passenger cars ran 224,481 miles, carrying 374,816 passengers, and its freight cars ran 39,270 miles carrying 71,347 tons. The financial statement for the year ended June 30, 1912, shows:—Gross earnings from operation, $117,492.00; operating expenses, $70,287.88; net earnings from operation, $42,204.12; deductions from income—taxes, $1,723.08; interest on funded debt, $34,194.00; interest on floating debt, $1,851.00; total, $37,768.08, leaving a net income of $9,436.04. This amount added to the surplus of $9,708.94 brought forward from 1910-11, made a total of $19,144.98 carried forward to 1912-13 account. The capital account at June 30, 1912, showed outstanding:—Common stock, $760,600; funded debt, $800,000; a total of $1,560,600, or $34,726 per mile of railway.

The local officials at Chatham are:—General Manager, Chief Engineer and Purchasing Agent, W. Norris; General Freight and Passenger Agent and Assistant Treasurer, J. E. Richards; Track Foreman, G. Lampman.

Smoking on New York Street Cars.—The Public Service Commission has directed all street railway corporations in the city of New York to prohibit smoking or the carrying of lighted cigars, cigarettes and pipes on the cars or the platforms of cars operated by them, except the open cars having running boards along the sides and having seats accessible directly from such running boards. On such cars smoking will be permitted on the four rear seats of each car, including the seats on the back platform. The order also prohibits smoking or carrying lighted cigars, etc., in the stations, station platforms, station stairways, waiting rooms, waiting cars or shelters. The companies are required to enforce these regulations and to post conspicuously in cars and stations, notices stating that such practices are prohibited.



Electric Railway Projects, Construction, Betterments, Etc.

British Columbia Electric Ry.—Negotiations are reported to be in progress with the Great Northern Ry. for the purchase of the abandoned right of way of the Cloverdale-Blaine line between Hazelmere and the International Boundary at Blaine. The proposed electric line will connect with the line projected by the Stone and Webster Corporation to Bellingham, Wash., and an extension may be built to the mouth of the Campbell River.

The track along Front St., New Westminster, is being raised to conform to the new city street grade. The new 40 car barn at New Westminster will be ready for use as soon as the new switch points and connections are put in place. The yards a little west of the car barns are practically completed. There have been 7.5 miles of track laid, which will give accommodation for 448 cars. (Sept., pg. 442.)

The Vancouver Island Power Co., which is a subsidiary of the British Columbia Electric Ry., has completed the construction of the dam on the Jordan River, in connection with its power plant. The plant originally developed 12,000 h.p., and with the additional storage area now provided additional units will be added to bring the power developed up to 32,000 h.p. Some of the additional units have already been installed. The steam auxiliary power plant at Brentwood Bay, which has a capacity of 5,000 h.p., will now be held as a reserve plant.

Buffalo, Lockport and Rochester Ry.—The Public Service Commission of the Second District of New York State had before it, Sept. 12, the proposals for the reorganization of the Buffalo and Lake Erie Traction Co., which involves the acquirement of the B.L. and R. Ry., and the Canadian American Power Corporation. The minority holders of the B. and L.E.T. Co. have organized to oppose the application. (Sept., pg. 442.)

Calgary Municipal Ry.—The ratepayers of Calgary, Alta., are to vote upon the question of the extension of the electric railway to Shaganappi Park. The promoters of the extension offer to pay for the construction of the line to Spruce Cliff and to guarantee the cost of operation for four years. There is considerable opposition to the proposal. (Sept., pg. 442.)

C.P.R. Electric Line—Hamilton to Niagara Falls.—Press reports state that at a meeting of the St. Catharines, Ont., City Council, Sept. 12, an agreement was drawn up which will be laid before the C.P.R. management at Montreal and, if agreeable, will be incorporated into a bylaw that will be submitted to the people of St. Catharines for approval, which it is expected will be before the end of this year. St. Catharines is to contribute $100,000 towards the construction of a bridge across the old Welland Canal. The company is to commence work within six months of the passage of the bylaw and have the line completed within two years, although it is expected that it will be constructed within one year. A maximum rate of 2c. a mile for passengers was agreed to. M. N. Todd, President Galt, Preston and Hespeler St. Ry., represented the C.P.R. at the meeting and arranged the terms of the agreement. (Aug., pg. 395.)

Dunnville, Wellandport and Beamsville Electric Ry.—Press reports state that arrangements have been completed under which a further amount of bonds has been taken up, and that construction will be renewed at an early date. About 13 miles of grading is reported to have been completed, and ties have been laid, everything being ready for tracklaying. (June, pg. 286.)

Edmonton Interurban Ry.—The Board of Railway Commissioners has authorized the operation of cars across the Edmonton, Dunvegan and British Columbia Ry's. line for construction purposes only, pending the installation of an interlocking plant. It is proposed to operate gasoline electric cars over the line, and it is expected that the first section from Edmonton to St. Albert, Alta., will be opened for traffic at an early date. (Jan., pg. 39.)

Hamilton St. Ry.—An agreement was verbally reached, Sept. 10, with the Wentworth County Council under which the company was to be granted a franchise for the extension of its Main St. line from Kenilworth Ave. to the Bartonville line, but when the formal resolution approving of the same came up for consideration, Sept. 11, an amendment giving the franchise for a single line only was carried. Upon this the company withdrew the application. (June, pg. 286.)

London, Grand Bend and Stratford Ry.—Application is being made to the Ontario Legislature for the incorporation of a company with this title, to build a railway from London, northwesterly through the townships of London, Lobo, East Williams, West Williams, McGillivray and Stephen, including the village of Parkhill, to Grand Bend, thence easterly to Exeter and Stratford, and then westerly to London, and branch lines. Gray and Gray, Toronto, solicitors for applicants.

An office has been opened at Parkhill, by A. E. Beer and C. T. McAllister, representing the promoters, and engineering parties are reported to be going over the projected routes. Those interested in the project are said to have secured a large area of land at Grand Bend, and it is said they will develop it as a summer resort, with hotel, etc., under the title of the Huronic Beach Co. (See Stratford Ry., Sept., pg. 443.)

Medicine Hat, Alta.—We have been officially advised that owing to the difficulty in the way of securing materials it has been found impossible to complete the line for operation this fall. An arrangement has been made with the city council to defer the commencement of actual construction until April 1, 1914. (Aug., pg. 395.)

Melita, Man.—We are advised that the town has granted a franchise for a street railway in connection with a natural gas franchise. It is not expected that borings will be made for natural gas until the spring of 1914. At present there is not the least intention of going into the street railway business. R. E. Denny, Brandon, Man., is interested in the natural gas proposition. (Aug., pg. 395.)

Montreal and Southern Counties Ry.—Press reports state that much of the work on the roadbed for the extension to St. Cesaire, Que., has been completed; and that it is contemplated to extend the recently completed electrification of the Central Vermont Ry. branch from Richelieu to Marieville, Que., four miles. (Aug., pg. 395.)

Montreal Tramways Co.—The tracks on Papineau Ave. have been laid to Craig St., and a new route through that avenue was opened for traffic Sept. 8. A large amount of other work is being done on the other lines in the city, and steel is being delivered for the new lines and intersections. New intersections are being laid at Craig and Beaver Hall Sts. These extend 200 yards on either side, the rails weighing 116 lbs. to the yard. As soon as these are completed new intersections will be laid at St. Catherine and St. Lawrence Sts.; Craig and St. Lawrence Sts.; St. Denis and Craig Sts.; St. Denis and St. Catherine Sts.; Windsor and St. Catherine Sts.; Windsor and St. James Sts.; St. James and McGill Sts. (Sept., pg. 442.)

Niagara, St. Catharines and Toronto Ry.—The Board of Railway Commissioners has approved of location plans of the extension of the line to the lake front on lot 12, con. 1, Grantham tp., Ont., 0.68 of a mile.

A contract is reported to have been let to Newman Bros., St. Catharines, Ont., for the erection of a transformer station in that town. (May, pg. 235.)

Niagara, Welland and Lake Erie Ry.—Work is progressing on the extension to Parkway Heights, and the West Main St. line is nearly completed. The line out East Main St. to Rosedale is being delayed on account of inability to get necessary interlocking apparatus where crossing is made over the G.T.R. Nothing has been done on the Danville extension so far. T. R. Cummings is Engineer. (Feb., pg. 90.)

Press reports stated recently that the company intended using storage battery cars. It appears that this was suggested at a town council meeting, but we are officially advised that the management, after investigating the cost of operating storage battery cars, came to the conclusion that with the cheap Niagara power which is locally available the trolley system is preferable. (June, pg. 286.)

Ontario West Shore Ry.—The Goderich, Ont., town council, has referred to a special committee the question of preparing evidence for submission to the Ontario Railway and Municipal Board, when the enquiry into the condition of the O.W.S. Ry. is again taken up. (Feb., pg. 90.)

Port Arthur and Fort William Electric Ry.—The Fort William, Ont., City Council has decided to have the extension of the line across the Kaministikwia River to Island 2 completed this year. (Sept., pg. 442.)

Sandwich, Windsor and Amherstburg Ry.—A second track is reported as being constructed on Wyandotte St., Windsor, Ont., from Ouellette Ave. to Mercer St. (Oct., 1912, pg. 521.)

Saskatoon Municipal Ry.—The Sutherland, Sask., Town Council, has passed a bylaw granting a franchise for the extension of the Saskatoon Municipal Ry. into Sutherland. The agreement stipulates that the line is to be completed by Jan. 1, 1914. As soon as this section is shown to be paying operating expenses and fixed charges, it is to be extended. The franchise is to extend for 20 years, and is to be renewed unless Sutherland decides to purchase the lines within its boundaries. (July, pg. 345.)

Three Rivers Tramway Co.—We are officially advised that it is not likely that any construction will be done on this projected electric railway before the spring of 1914. The company is still in the formative period, and nothing beyond preliminary surveys have been made. The principal officers are:—President, L. P. Normand; Secretary Treasurer, R. Bournival, Three Rivers, Que. (Aug., pg. 395.)

Toronto Suburban Ry.—Tracklaying is in progress on the line from Lambton to Guelph, Ont., between the C.P.R. at Cooksville and Meadowvale, but it is not expected to have any part of it in operation this year. D. McKenzie, who has been in charge of clearing the right of way into Guelph, is reported to have recently stated that grading operations would be started in that city at the beginning of October, and that it was expected to have the line completed and in operation to that point in the spring. Sir Wm. Mackenzie is reported as stating that the line will be completed to Berlin during 1914. It is not intended to build any further west than Berlin at present, but arrangements will probably be made for building of branch lines to Waterloo and Galt. (Sept., pg. 443.)

Winnipeg Electric Ry.—The Board of Railway Commissioners has passed an order permitting the Winnipeg, Selkirk and Lake Winnipeg Ry., a subsidiary of the W.E. Ry.—to operate its cars for construction purposes on the line to Stonewall, Man., across the C.P.R. Selkirk branch. This will enable construction to be proceeded with, and it is reported that track will be laid into Stonewall by Oct. 30. Application has been filed with the Board of Railway Commissioners for the construction of a subway, the C.P.R. consenting, under the C.P.R. at the point where the above crossing has been made. (Sept., pg. 443.)

New Cars for London Street Railway.

The London St. Ry. is having built by the Preston Car and Coach Co., 6 single truck, single end, p.a.y.e. city cars. They are to be mounted on Brill 21 E trucks, 8 ft. wheel base. The doors on the rear platform will be operated in conjunction with the folding steps by a system of leverage under the control of the conductor. The front vestibule door is to be operated in a like manner. The bodies are to be finished inside and outside in natural cherry. There will be 10 cross seats, 2 longitudinal and 3 stationary seats in each car, giving a total seating capacity of 32 passengers. There will be no bulkheads. The roof will be turtle back.

The under frames will be built entirely of steel, the outside members consisting of 15 by 3-16 in. steel plate reinforced at the lower edge with a 3 by 5 by ⅜ in. steel angle. Two sub sills of 6 I beams will extend continuously from end to end of car body, spaced at proper distances to receive the truck frame. This sub sill will be connected with the outside sill at short intervals by diagonal bracing. The crossings will be of 4 in. channel steeel. The end sills will be made up by rivetting two 3 by 5 by ⅜ in. back to back, and having a ⅜ by 9 in. steel plate sandwiched between them. The outside platform knees will be strong enough to carry the entire platform without having recourse to the use of any centre members. There will, however, be two 4 in. channels placed flatwise underneath the platform and extending continuously from the buffer channel to the end sill, then bent at an angle of about 60° outwards and rivetted to the 6 in. I beam sub sills. These members are for the purpose of taking thrust or draught.

Personal Paragraphs.

JOHN PEARSON, heretofore Assistant Superintendent, Hamilton St. Ry., has been appointed Superintendent, vice Duncan N. Miller, deceased.

DUNCAN McDONALD, President, Canadian Auto-bus Co., is expected to arrive in Montreal with the first consignment of busses from England early in October.

Mrs. Warburton, who died in St. Joseph's Hospital, London, Ont., Sept. 1, aged 84, was mother of W. N. WARBURTON, General Manager, London and Lake Erie Ry. and Transportation Co.

A. S. BALSDEN, chief electrician of the London and Lake Erie Ry. and Transportation Co., was accidentally electrocuted at the company's substation in St. Thomas, Ont., Aug. 28.

I. L. GODFREY has been appointed Comptroller, International Transit Co., and Trans St. Marys Traction Co., subsidiary companies of the Lake Superior Corporation, and E. B. BARBER has been appointed Assistant Comptroller of the some companies.

D. D. McEWEN has been appointed Roadmaster, London Street Ry., London, Ont. He came to Canada from Glasgow, Scotland, in 1911, where he had been in Caledonian Ry. service for about seven years.

Electric Railway Finance, Meetings, Etc.

Brandon Municipal Ry.—Receipts for July, $8,430; operating expenses, $4,430.

British Columbia Electric Ry. Gross earnings for July, $755,943; operating expenses, maintenance, etc., $549,947; net earnings $205,996, against $650,245 gross earnings; $468,277 operating expenses, maintenance, etc.; net earnings $181,968 for July, 1912. Owing to the practical completion of the hydro-electric installation of the Vancouver Power Co., a subsidiary concern, the income of subsidiary companies is now included with that of the railway, instead of estimating the net income, as heretofore.

Cape Breton Electric Co.—Gross earnings for July, $32,543.24; operating expenses and taxes, $17,615.56; net earnings, $14,927.68; interest charges, $4,891.67; balance, $10,036.01; bond sinking and improvement funds, $1,190; net balance, $8,846.01, against $33,115.85 gross earnings; $16,973.96 operating expenses and taxes; $16,141.89 net earnings; $4,495.83 interest charges; $11,646.06 balance; $1,206.67 bond sinking and improvement funds; $10,439.39 net balance, for July, 1912. The construction charges during July, were $14,279.79.

Grand Valley Ry.—J. L. Addison, St. George, Ont., on behalf of himself and other bondholders, has entered an action against A. J. Pattison, W. S. Dinnick, John Firstbrook and other directors of the company for loss occasioned by the alleged malfeasance of the defendants as directors, particularly in connection with the contract for the construction of the railway made with Dill & Co., and the issue and delivery from time to time of bonds to the amount of $3,285,000, and in respect of the improper issue of shares to the amount of $900,000. They also seek to recover $70,000 which they allege was improperly obtained by the directors and retained for their own use. An accounting by the directors of all their dealings with the company's assets is asked for.

Halifax Electric Tramways Co.—Application is being made to the Nova Scotia Public Utilities Commission for power to issue 6,000 additional shares of common stock par value $100 each. The company's representatives explained that the proceeds would be used to redeem $600,000 of bonds due in 1916, and the premium obtained on the stock would be used for extension and betterments to the line. The city of Halifax opposed the application, and the hearing was adjourned.

Hull Electric Co.—The annual meeting of shareholders was held Sept. 3, when the statement of affairs for the year ended June 30 was submitted. W. R. Baker, Secretary, C.P.R., was elected President, and E. W. Beatty, General Counsel, C.P.R., Vice President, for the current year.

Oshawa Ry.—The annual meeting of shareholders was held at Deseronto, Ont., Sept. 8. Following are the officers and directors for the current year,—President, E. W. Rathbun, Deseronto, Ont.; Secretary and Treasurer, H. W. Cooper, Gananoque, Ont.; Manager, J. F. Chapman, Gananoque, Ont.; other directors, D. A. Valleau, Oshawa, Ont., and B. R. Hepburn, M.P., Picton, Ont.

Port Arthur and Fort William Electric Ry.—Committees representing the City Councils of Port Arthur and Fort William, Ont., are discussing the details which have to be worked out in view of each city having its own electric lines. The most important point to be settled is as to the operation of the line connecting the two cities.

Toronto Ry., Toronto and York Radial Ry., and allied companies.—Gross earnings for July, $811,966; operating expenses, maintenance, etc., $401,954; net earnings, $410,012, against $712,456 gross earnings; $329,607 operating expenses, maintenance, etc., $382,849 net earnings for July, 1912. Aggregate gross earnings for seven months ended July 31, $5,467,452; net earnings $2,659,445, against $4,725,175 aggregate gross earnings; $2,418,921 net earnings for same period 1912.

Winnipeg Electric Ry.—Gross earnings for July, $336,821; operating expenses, $183,689; net earnings, $153,132, against $315,362 gross earnings; $163,930 operating expenses; $151,432 net earnings for July, 1912. Aggregate gross earnings for seven months ended July 31, $2,309,195; net earnings $1,030,121, against $2,124,066 aggregate gross earnings; $992,561 net earnings for same period 1912.

Winnipeg Electric Ry.—Sir Wm. Mackenzie is reported to have stated in Toronto, on his return from England, Aug. 31, that what were known as the Reece interests had been taken over by the W.E. Ry. The Reece interests own a charter for the development and distribution of power in Manitoba, and a number of charters and franchises for building electric railways in the more thickly settled territory of the province round Winnipeg.

Electric Railway Notes.

The Dominion Power and Transmission Co. has received one freight car from the Preston Car and Coach Co.

A bylaw is being prepared by the London, Ont., City Council, providing for the operation of a Sunday car service on the London St. Ry. It is said that the ratepayers will be asked to vote thereon, Oct. 15.

The Edmonton Radial Ry. has received 10 steel underframe double truck single end pay-as-you-enter cars, from the Preston Car and Coach Co., making 28 delivered, out of an order of 35. The remainder will not be built until 1914.

The Cape Breton Electric Co. recently ordered three double truck, double ended, closed cars, 44 ft. 4 ins. long, equipped with Baldwin trucks, four 40 h.p. Canadian Westinghouse motors for each car, and Canadian Westinghouse air brakes.

The relatives of the late Duncan Miller, Superintendent, Hamilton St. Ry., are suing the Hamilton City Council, in connection with his death in an automobile accident, alleged to be due to the condition of the road. The council is to defend the suit.

The Nipissing Central Ry., which is operated in connection with the Timiskaming & Northern Ontario, will probably have 2 more cars added in the near future to its present equipment of 6, the matter being under consideration by the T. & N.O.R. Commission.

The Niagara, St. Catharines and Toronto Ry. has installed a derailing switch on the main line between Merritton and Thorold, Ont., where there is a steep grade, in order to prevent possibility of a collision in the event of cars breaking loose, as occurred recently.

The Edmonton, Alta., Radial Ry. employes are asking the city council to grant an increase of 2½c. an hour, and the matter is under consideration. The rates in force under the agreement, which expired Sept. 1, were: First six months, 27½c. an hour;

second six months, 30c.; second year, 35c.; after two years, 37½c.

The number of passengers carried on the British Columbia Electric Ry. cars in Victoria, during August, was 1,202,113, against 978,289 in Aug., 1912. The total passengers for the eight months ended Aug. 31, was 8,802,958, against 7,026,230 during the same period 1912.

During August, passenger traffic on the Berlin and Waterloo St. Ry. increased about 10.8% over the same month in 1912. The number of passengers carried was 99,236, the net profit for August amounting to $945.05. This increase occurred notwithstanding the fact that a temporary track is being operated on the side of the road, during double track construction.

The Guelph Radial Ry. has received one double end, double truck, pay-as-you-enter city car, from the Preston Car and Coach Co. It is mounted on standard truck with rolled steel wheels, Westinghouse 101B2 quadruple motor equipment, Westinghouse SM1 air brake, and the body is finished in natural cherry inside and out, Crouse-Hinds Imperial arc headlight, Providence fenders, and Root scrapers.

The Port Arthur and Fort William Electric Ry., which is now being operated by a joint commission appointed by the two cities, will be separated before the end of the year, each city operating its own section. Steps are being taken to arrange terms of interchange of passengers, and other matters that will arise owing to the separation. It is said that there will be no change in the general service, except that cars will probably be run at shorter intervals.

As a result of arbitration proceedings a two years agreement has been signed between the British Columbia Electric Ry. and its employes. The arbitrators by a majority declined to alter the existing schedule, but made certain recommendations as to alteration of hours, etc. A minority report recommended increases of from 1½ to 3½ cents an hour; together with a schedule for clerks and other employes, whom the majority report would not recognize. The reports were made public Aug. 28, and after some discussion, the company meeting the men on some minor points, an agreement was reached to run for two years, the existing pay schedule to rule.

New Cars for Montreal Tramways Company.

The Montreal Tramways Co. has ordered 25 motor cars and 25 trailer cars, to be built in the United States, for its St. Catherine St. line, on which the trailers will be run from early in the morning until late at night, the attaching and detaching being done at the car house. The travel on the St. Catherine St. line is very heavy, the average headway being a minute and a half. Passengers will enter the motor car by the rear end and the trailers by the front end, and there will be an exit aisle at each entrance platform, as well as at the motorman's end. Delivery of these cars is to be made in December.

Following are their principal dimensions:—seating capacity, 48; bolster centres, length, 21 ft.; length of body, 32¼ ft.; length over vestibule, 44¼ ft.; width over sills, 8¼ ft.; width over all, 8 ft. 4¾ in.; height, rail to sills, 2 ft. 3 13-16 in.; sill to trolley base, 8 ft. 10⅞ in. The body will be wood, with steel sheathing; interior trim, cherry; roof, plain arch; underframe, steel. Among the special equipment are the following:—cables, conduits and junction, boxes, gears and pinions, and motors, Westinghouse; couplers, Tomlinson; destination signs, Keystone; paint and varnish, Murphy.

Judgment Against the Brantford Street Railway Company.

An action brought by the City of Brantford against the Brantford St. Ry. Co., the Grand Valley Ry. Co., E. B. Stockdale, Receiver of the Grand Valley Ry. Co., the National Trust Co. and the Trusts and Guarantee Co., the two latter being respectively mortgagees to secure issues of bonds of the Brantford St. Ry. Co., and the Grand Valley Ry. Co., was tried at the Assizes at Brantford, Ont., in the third week of September. The action was brought for cancellation of the existing franchise, which was granted in 1902 for 50 years. A new franchise was granted in 1907, also for 50 years, which, however, was also to date from 1902. Among the grounds on which cancellation was asked were general failure to observe the contract with the city, non reconstruction of the east ward loop, failure to provide proper cars, not providing distinguishing lights on cars, and failure to pay the city for taxes and work done.

Chief Justice Meredith gave the defendants one month to elect whether judgment shall be entered for forfeiture of the franchise, or whether they will accept the terms imposed, viz., to take one year's time within which to comply with the terms of the contract with the city by completing and rebuilding the railway in the city, placing new rolling stock on it in accordance with the contract and paying up all moneys owing to the city. In any event, the defendants must pay $100 a month damages until they comply with these conditions and the cost of the suit. If they decline the terms, and accept the judgment for forfeiture, there is also judgment for $1,200 damages. W. T. Henderson, City Solicitor, of Brantford, acted for the city.

It came out at the trial that $1,700,000 of bonds had been issued, but it was not known whether they had been sold or simply pledged. They were issued for building a railway from Brantford to Woodstock, and from Brantford to Port Dover, which has not been done.

Advance in Fares on British Columbia Electric Railway.

Prior to making a change in fares on Sept. 18, R. H. Sperling, General Manager, made the following statement:—

"As is well known, there has been a steady increase in the cost of labor and supplies for some years past. Everything the company buys—labor, electrical equipment, rails, rolling stock and material of every kind—has grown in value until a proper relation no longer exists between the cost of a street car ride and the price paid for it. To the people at large the cost of practically every necessary commodity has also advanced, excepting only the street car ride, which has remained the same. On the other hand, the wages of all classes of labor, skilled and unskilled, have increased step by step with the cost of living. No such compensating advantage has come to the company, consequently the margin between operating cost and revenue earned has gradually decreased until the profit earned by the company on its investment is no longer adequate to induce the investor to put fresh capital—so necessary for the development of the territory served by the company—into the concern. Apart, however, from the viewpoint of obtaining additional capital, the company has not earned a reasonable profit on its operations during the past 18 months—certainly no such return as would induce local people to invest their savings in the enterprise.

"The company's investment in British Columbia amounts to approximately $45,000,000, consisting entirely of cash received from its stockholders, which is at present earning about 4½% per year. If the necessary further capital required for the adequate development of the territory served by the company is to be raised on reasonable terms, it is absolutely essential that the company's railway revenue should be increased.

"Although the necessity for abolishing commutation rates has been apparent for some time, we have repeatedly postponed action, hoping for an adjustment in economical conditions, which would render any change unnecessary. No such adjustment has come, and none is in sight. Therefore, to further delay setting the company's affairs in line with conditions as they now exist, and are certain to continue for some time, would be not only unfair to those who have furnished the money for our development, but dangerous and unsound from a financial standpoint.

"The situation which confronts us in British Columbia has been experienced generally along the Pacific coast, and in a number of cases elsewhere has been met by a return to the straight five cents fare. Our company, however, does not intend to go to this extreme, unless a still further increase in operating costs compels us. We propose, therefore, continuing a low rate ticket for workingmen, which will be sold in strips of 10—5 white and 5 green—at 40c. a strip, or 4c. a ride. The white tickets will be good only up to 8 a.m. The other half will be good at any time up to midnight, when the 'owl' rates will come into effect, where 'owl' cars are run. Apart from these tickets the fare will be 5c., but for the convenience of the public, blocks of tickets will be sold, 5 for 25c. School children's rates will remain as before.

The new rates will be effective on and after Sept. 18, and the tickets at present in force will not be sold after Sept. 17."

Winnipeg Electric Railway Power Plant.—Recent press reports stated that the W. E. R. Co. had decided to build a large power plant twelve miles farther down the Winnipeg River than the present plant and that a contract therefor had been let. We are officially advised that the reports are entirely without foundation. The company has been for some time looking for another power site, but nothing definite has been settled. No new site has been arranged for or engineers engaged, nor have any arrangements whatever been made for the erection of a new power plant. The reports stated that the power plant was to be built at the Grand Bonnet Falls, about 12 miles farther down the Winnipeg River than the company's present power plant is located, that the new plant was estimated to cost about $5,000,000, and that a contract had been let for its construction to J. G. White and Co., New York.

The Master Car and Locomotive Painters Association of the United States and Canada held its 44th annual convention at Ottawa, Ont., Sept. 9-12, when reports were received and a number of topics in which the association is interested, were discussed.

At a meeting of the Aylmer, Ont., Board of Trade, Sept. 14, a resolution was passed in favor of building an electric railway from that town to Pond Mill, on the London and Port Stanley Ry., in the event of that line being electrified.

Railway Route Map Approved.—The Minister of Railways and Canals, Aug. 23, approved the route map of the Glengarry and Stormont Ry. from the C.P.R., near St. Polycarpe Jct., to Cornwall, Ont., 28 miles.

Marine Department.

The New Government Dry Dock at Lauzon, Quebec.

Canadian Railway and Marine World for September contained a preliminary description of the Government drydock to be built at Lauzon, two miles east of Levis, Que., near the present Government drydock and nearly opposite the city of Quebec. A plan showing the location of the new drydock with regard to the present one, is given herewith. This shows the layout of the new drydock and the arrangement of docks, buildings and approach slip to be built in conjunction with it.

The dock will have the following dimensions: length from caisson stop to head wall, 1,150 ft.; width of entrance, 120 ft.; depth on sill at ordinary high water spring tides, 40 ft. It will be divided into two parts, 650 and 500 ft. respectively; the outer entrance will be closed by a steel rolling caisson, and a ship or floating caisson will close the inner entrance. The outer caisson will also fit the outer face of the outer sill, so as to facilitate repairs to the rolling caisson when required. The dock will be emptied by three centrifugal pumps, each having a capacity of 60,000 gals. a minute, with direct electric drive, power being derived from three turbo-generator sets receiving steam from 8 water tube boilers with a combined capacity of 3,600 h.p. The rolling caisson is to be operated by electrical means from the same source of power.

The site for the new drydock covers the section of the shore lying principally between the water lines of high and low spring tides, and will involve the making of filled land. For the proper carrying on of the work of construction, the portion of the site in the immediate vicinity of the drydock is to be completely enclosed during operations by the cofferdam shown in the plan. From this protected area, the water is to be constantly drawn off, in order that the work may be expeditiously proceeded with.

The dock walls, floor, portal walls of the outer and inner caissons, the culverts, pump wells, sumps and superstructure of the wharf and bulkhead, will be built of concrete, reinforcing being used in some instances.

The drydock will have a docking length of 1,150 ft., and the inner end, 650 ft. long, can be separated from this length by a floating caisson for the docking of smaller vessels. Most of the excavation for the drydock will be through solid rock, with the exception of a thin earth crust. The excavation is to be carried at the inner end of the dock to a depth of 28.5 ft. below the datum line, the latter being at the level of the low water spring tides. This excavation at the bottom will be 122 ft. wide sloping up to ground level on a 1 to 2½ batter. From the inner end of the dock, the bottom will slope forward on a slope of 1 in 1,000, so that near the forward end, the cutting will be 29.5 ft. below datum.

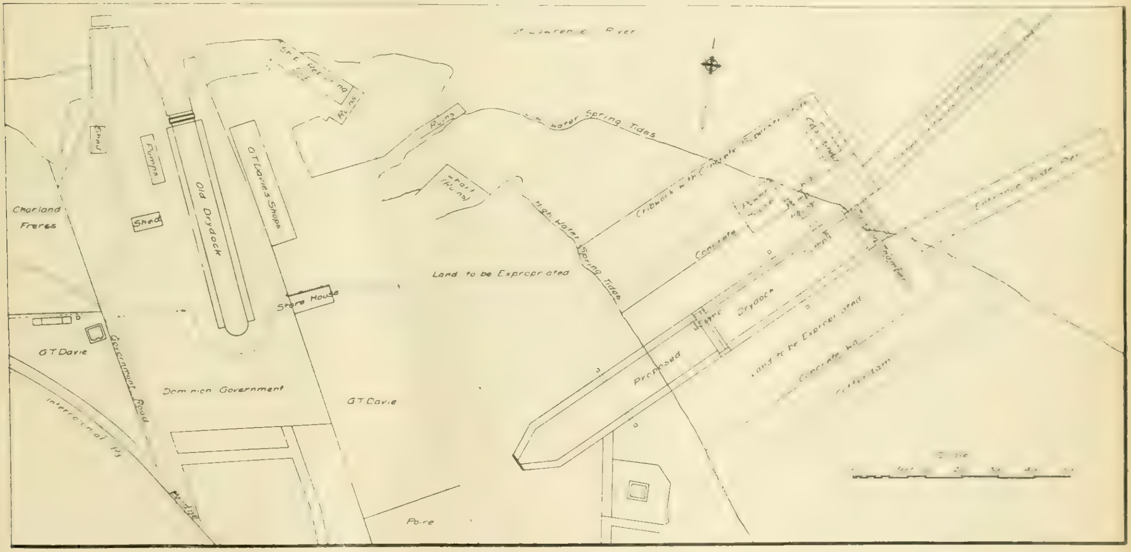
The side walls of the excavation will have the slope mentioned, but the concrete walls are to be stepped, giving an average wall thickness of concrete of about 5 ft. They are to be built in 30 ft. sections leaving ½ in. expansion joints between. Each joint is to have a 1 in. V joint. The ends of the sections are to be moulded with a groove, the whole joint to be filled with grouting on completion.

The flooring of the dock will take the 1 in 1,000 slope of the excavation for drainage purposes. The concrete flooring will be 5 ft. thick, with a 6 in. slope from the centre to the sides, for draining to a 6 by 12 in. gutter along each side. Under the floor and at the back of the side walls, drains are to be provided leading to the pump sumps, so as to prevent any possible hydrostatic pressure that may be produced by the accumulation of water from seepage. The centre of the floor will be provided with three rows of granite blocks 18 ins. thick, the middle row being 4 ft. wide and level, and those on each side of this centre row, 3 ft. wide, and having the slope of the floor. The floor formation is to be in sections similar to the walls, to be grouted on completion.

At the end of each main section, on each side of the dock, 8 points in all, there will be stairs moulded in the concrete of the walls. These steps are to be 12 ins. wide., with a 12 in. rise. Centrally in each wall of both sections, at four points, there will be timber slides, which will be 8 by 12 ft. passages at right angles to the dock walls, sloping back at a sharp angle from the bottom of the dock to ground level. One side of each passage will be floored with granite slabs for the timber slides, and alongside the slide in the passage, will be a stairway to the surface, with 10½ in. tread and 12 in. rise.

The coping of all the altars will be granite blocks, 12 ins. thick and 3 ft. wide. Between the altars, there will be 8 galvanized iron ladders. The coping of the side and caisson chamber walls will also be of granite slabs. On each side of the dock, there will be 12 cast iron bollards, set in concrete blocks, and also located along the side walls, there will also be 9 capstans, but it is undecided as yet whether or not these will be electrically operated.

The keel blocks will be of cast iron in three pieces of a normal height of 4½ ft. The bilge block slides will be located every 16 ft. through the length of the dock. They are to be made of 3 in. white oak, 12 ins. wide. The bilge blocks will be of



New and Old Government Drydocks at Lauzon, Que pitch pine, provided with slide irons and oak slide blocks for clamping to the bilge block slides. The hauling chains are to be of ⅜ in. short link chain, two chains for each block.

The rolling caisson for the outer end of the drydock will measure 123 ft. by 19 ft. 11 ins. It will be made of mild steel, with the side plate rivetted to a steel frame, and the sides of the plates lapped and single rivetted, and the ends covered with butt plates double rivetted, with the bottom of a similar construction. It is designed to withstand a head of 45 ft. It is to be so ballasted that it will float to a depth of 23½ ft. with all the valves closed. At a height of 23 ft. from the bottom, there will be a watertight deck, on which the rising tide will be allowed to enter through side openings of such sectional area that the water covering will rise at the rate of 4 ft. an hour with the flood tide, thus preventing the caisson from floating. The openings in the sides will connect with the top of the deck with steel pipes provided with water tight valves. By closing these valves in winter or when the dock is not in operation, the water will not be allowed on this deck, and the lower part of the caisson will then be filled to counterbalance the flotation, valves in the lower portion being arranged for this purpose. Six water tight steel culverts of an approximate area of 10 sq. ft. each will pass through the caisson for filling the dock.

The water tight deck of this caisson will be of sufficient strength to support a water column of 22 ft. The chamber end of the caisson will have a built up steel drawbar with attached chain. This chain, passing over a pulley, will connect through a worm gearing to a motor drive. The bearing face of the inner side of the caisson will have a green heart timber fitted into angles for the bearing surface, and inside this timber, there will be a 1 in. steam pipe to thaw out the joint when required. The lower chamber of the caisson will also have steam pipe connection to keep it free of ice in the winter and when not in service. The top of the caisson will have a folding bridge with an apron of 4 in. pine standing on the level of the wall copings. Side railings on this bridge will be arranged to fold with the bridge when the caisson is moved back into its chamber. The caisson chamber will be covered over with 4 in. planking.

The caisson chamber will be of similar construction to the side walls, only vertical, 49½ ft. from the top of the wall coping to the roller altars. The chamber width will be 23 ft. On these roller altars on each side of the bottom of the chamber will be mounted in cast iron bearings at 8 ft. centres, 2 ft. flanged wheels, on which will bear medium hard steel strips on the lower face of the caisson. The whole will be of sufficient strength to support the caisson, when filled with ballast, without deflection. The edges of the caisson chamber will be finished with granite blocks.

For the 650 ft. inner end of the dock, there will be a floating caisson made sufficiently strong to withstand the same heads as the rolling caisson. It is to be built with water tight ballast, air and tidal chambers, and will contain enough ballast to be easily handled when afloat. There will be six filling culverts similar to those in the rolling caisson, operated electrically from above. Two centrifugal pumps with bronze impellers, each of a capacity of 5,000 gals. a minute against a 40 ft. head, operated by electric motors of 100 h.p., will be installed in the floating caisson for removing the water ballast from the scuttling tanks. The floating caisson will float on an even keel without any listing. The top deck will be 15 ft. wide and will serve as a bridge across the dock. The closing timbers will be of green heart timber, and will be placed on both sides of the caisson. This caisson will fit against shoulders in the wall of the dock nearly midway in its length. Beyond the outer end of the dock, there will be also similar shoulders, against which the floating caisson can be set when it is required to fix the rolling caisson.

The channel beyond the outer end of the dock is to be dredged to a depth of 30 ft. out into the river channel. On each side of this channel, there will be guide piers 600 by 75 ft., of timber construction with a concrete superstructure. The outer end of the piers will be 300 ft. apart.

Along the north side of the dock, there will be two sumps in the dock bottom, covered with iron grating. These will be located inside each of the caissons. From the inner one, beyond the floating caisson, there will be a 7 by 12 ft. tunnel leading back to near the outer caisson, turning at a right angle into the pump pit. From alongside this turn, the outer end sump will connect with a similar concrete culvert to the pump pit.

The pump house building will be 50 by 70 ft., over top of the pump pit. The pump pit will be built of concrete, on the outer wall of which there will be a ¾ in. coating of asphaltum to render the chamber damp proof. The floor of the pump pit is to be 41 ft. below ground level. The pump house over the pit will have walls of red brick 12 ft. high, with the inside finish of pressed brick. Inside the door of the building there will be a 10 by 12 ft. platform, leading down from which to the pump pit floor there will be a cast iron ladder with 9 in. treads and 7 in. risers. In the pump pit, there will be three 60,000 gal. per min. centrifugal pumps, with 58 in. suction and discharge pipes. Each of these pumps is to be operated by a 1000 h.p. d. c. motor. The pump pit will also contain two drain centrifugal pumps with 18 in. suction and discharge pipes, each direct connected to a 125 h.p. motor.

Alongside the pump house will be located the power house, 100 by 120 ft., divided into two rooms, each 50 by 120 ft. One of these will be the boiler room and the other the generator room. The walls of both, 25 ft. high, will be similar to the pump house construction, except that the walls of the generator room are to be glazed to a height of 6 ft. The generator equipment will comprise three generator sets, of 1,500, 750 and 300 k.w. each, supplying direct current at 550 volts. The motive power will be steam turbines. There is also to be a 100 k.w. 220 volt. d.c. generator for lighting, direct connected to a high speed vertical engine. The generator room will also contain all the switchboard and control apparatus for the electrical equipment.

The steam generating equipment will consist of a battery of eight water tube boilers, six of which will be 500 h.p., and the other two, 300 h.p. each, all arranged in batteries of two and provided with automatic stokers. In addition, there will be the usual equipment of feed pumps, heaters, etc. The power house chimney will be 180 ft. high, with an inside diameter of 12 ft., and 24 ft. outside diameter at the base. It will be built of red brick with an inner shell of fire brick. In the power house, there will be sections for a small store room, 8 by 12 ft., and closets and wash room.

The other buildings of the plant will include a coal shed on the edge of the outer end of the dock, 50 by 100 ft., with 14 ft. walls roofed over.

Canadian Pacific Railway s.s. Princess Maquinna.

The s.s. Princess Maquinna, built at Esquimalt for the British Columbia Coast Service, has been placed in service on the Vancouver Island west coast route in place of the s.s. Tees. She is considerably larger than the Tees, and is the largest one of the type built at Esquimalt. She is built of steel and is classed 100 A1 at Lloyd's. She has 62 staterooms, and dining room accommodation for 65 passengers, with large social hall and smoking room and considerable promenade space. She is equipped with triple expansion engines, and her boilers are arranged to burn oil fuel. In addition to other up to date equipment there is a complete electric light installation, and wireless telegraph apparatus. She was designed for a speed in open water of 12 knots an hour. Following are her chief dimensions:—Length between perpendiculars, 232½ ft.; length over all, 250 ft.; beam, 38 ft.; depth to main deck, 17 ft.; displacement loaded when drawing 14 ft. of water, 1,860 tons. Further descriptive details were given in Canadian Railway and Marine World for June.

Canadian Pacific Ry. s.s. Princess Maquinna.

Capt. Forster, of the C.P.R. s.s. Empress of Ireland, has been appointed Marine Superintendent for the company, at Liverpool, Eng. Capt. Turnbull, of the Mount Royal, has been promoted to the Empress of Ireland; Capt. Murray, of the Monmouth, to the Mount Royal; and Chief Officer O'Reilly, of the Empress of Ireland, to the command of the Monmouth.

Montreal Harbor Commission's Chairman Reports on Grain Transportation.

W. G. Ross, Chairman, Montreal Harbor Commission, visited Port Arthur and Fort William, Ont., recently, and has embodied a large amount of information which he gathered on the trip in a report on grain transportation, elevators, tariffs and grain freight rates which contains a large amount of valuable data.

Mr. Ross had a conference with Dr. R. Magill, Chief Grain Commissioner, of which he says:—"As to means of increasing the movement of grain through Canadian ports, with the present lake marine and elevators, Dr. Magill stated that the cancellation of the Canadian grain certificates on all grain once it crossed the boundary, for export via United States ports, might have for effect the desired result, but before recommending that such drastic action be taken, due consideration would have to be given to the effect of such cancellation upon the market. Notwithstanding the fact that Canadian grain is shipped through the U. S. in bond, upon its arrival at destination seeds not grown in Canada are found mixed with it, and yet it is sold to the European miller bearing the Canadian certificate. The cancellation of the certificate, as suggested, might mean that grain shipped via Canadian channels would command a higher price in the European market, but such an action might be a hardship on the exporter, unless our facilities, etc., enabled him to reach that market with his grain. This question is now receiving the consideration of the Grain Commissioners."

In reference to the grain traffic Mr. Ross says:—Grain exporters with whom the subject was discussed stated that the reasons the St. Lawrence route is not taking care of the entire grain traffic of the Canadian Northwest are because of insufficient Canadian lake vessels, storage capacity at lake, bay and sea ports, and ocean tonnage from Montreal.

"The following table shows that the great leak in the main artery of Canadian transportation is not only still existent, but is increasing. In 1912 44,519,182 bush. of wheat were not only shipped from Fort William and Port Arthur to U. S. lake ports, but all of it excepting 333,829 bush. was transported in U. S. vessels.

Year.	In Can. vessels to Can. lake ports	In Can vessels to U.S. ports.	In U. S vessels to U.S. ports.
1908	37,350,463	1,944,179	14,[illegible]87,978
1909	37,296,735	3,315,646	15,972,860
1910	38,271,487	1,814,153	16,640,800
1911	36,378,535	1,258,469	32,548,065
1912	53,217,861	333,829	44,185,353

"These records show that, whereas the wheat shipments from these lake ports to lower Canadian ports increased slightly over 40% during the last five years, the shipments to U. S. ports have increased 180% during the same period, and whereas in 1908 Canadian vessels shared to the extent of one-seventh in the carrying of the U. S. routed grain, in 1912 their share dropped to the one hundred and thirtieth part of it. Last year 44,519,182 bushels of wheat left Port Arthur and Fort William routed through U. S. channels and the Canadian marine lost its transportation to the U. S. lower ports, which rightly belongs to it, by its scarcity of vessels, a scarcity which a deep water channel to the sea would soon not only make adequate, but would divert to Montreal and other Canadian ports the greater portion of the grain trade which now seeks U. S. ports. Large wheat shipments to Buffalo last year were made notwithstanding the fact that owing to the large grain crop in the U. S., the port was from November continually congested, scores of steamers lying there waiting to be unloaded, a condition of affairs which compelled shipowners to charter for storage cargoes only, and which caused considerable grain to go via Canadian routes which would have gone to Buffalo but for the delay in unloading there.

"Just so long as a bushel of wheat is carried from Canadian lake ports to U. S. lake ports in U. S. vessels, the lake shipping of Canada is inadequate, and until Canada has a west-bound trade, capable of supporting and warranting the building of vessels on a par with U. S. boats, she cannot control the carrying trade from the Canadian upper lake ports. With the development of the package trade westbound on the lakes Canadian vessel owners built steamers to control it, and these carriers have been a factor in making Montreal a large grain shipping port, which can carry grain cheaper than the craft that only gets a one way cargo, and then only at the spasmodic movement of grain sent east which reaches its full volume in spring and fall seasons. Until Canada furnishes a deep water channel to Montreal to tap her eastern coal fields, and supplies heavy westbound freight, which is so essential to the development of the large carrying capacity lake steamers, equal in every respect to the large U. S. craft, and capable of coping with them in rates, the U. S. will control the bulk of the grain shipments.

"Elevator storage capacity is the great and immediate need at every Canadian port on the grain route. The Government last fall endeavored to provide additional storage at Fort William and Port Arthur by suspending the Canadian coastal laws with the object of preventing grain being sent to Duluth and Minneapolis for storage, and also divert it from the U. S. route to the seaboard by allowing U. S. vessels to load storage grain for delivery to Canadian lake ports in the spring, a plan which, however, failed, for the majority of the 39 U. S. vessels which took on grain during the winter delivered their cargoes at U. S. lake ports. Georgian Bay ports were also so congested last spring that vessel owners not only reluctantly chartered to these ports, but insisted upon the insertion of a special guarantee clause, or in other words, the payment of demurrage charges, 3 to 4 days being the average demurrage during May and June. Like congestion also occurred at Port Colborne and Kingston, as may be seen from the following telegrams posted on the Winnipeg Grain Exchange:—

"Port Colborne, June 4, 1912.

"Standard Shipping Co., Winnipeg:

"Yours received. Expect have space for one—possibly two—small vessels this week. Montreal badly congested. Steamers being delayed seriously there which affects us. Prospects very bad until end of next week unless you can supply some tonnage. Met Neebing and Hero.

"(Sgd.) FAWCETT, Supt.

"Standard Shipping Co., Winnipeg:

"Canadian discharged Prescott. Kingston blocked. Notify shippers re insurance.

"(Sgd.) FAWCETT, Supt.

"These telegrams resulted in an attempt to divert the following vessels to Buffalo:—The Neebing, Empress of Fort William Scottish Hero, and T. Daniels, containing 600,000 bushels of grain.

"Whatever congestion there actually was at Montreal at the above date might have been removed before any of these vessels could possibly reach Port Colborne. At any rate, remarks like this should have been confined to Port Colborne, [illegible] to divert grain to U. S. channels.

"In order to help our Canadian [illegible] to handle our crops it is [illegible] that additional elevator storage should be provided at once so as to obtain during the short season of navigation [illegible] results from our ports.

"That vessel owners are naturally anxious not to have any demurrage at Montreal is demonstrated by the verbal suggestion of Mr. Wolvin, of the Mutual and Canadian Interlake Lines,—that the Harbor Commissioners should lease to him 500,000 bush. capacity in the annex to elevator 1 or 2, for which he would be willing to pay the usual elevator rates and such additional operating cost as would guarantee a return of 4 or 4½% on the cost of the leased portion, or a similar arrangement, if it could be worked out, to what is done for the industries desiring wharves, this scheme's purpose being so that a regular schedule of sailings westward could be adopted for the season."

The Crown of Cordova's Collision With the Lady of Gaspe.

The collision between these two vessels in the St. Lawrence River on the night of July 28 was inquired into at Quebec in August by Commander H. St. G. Lindsay, R.D., R.N.R., Dominion Wreck Commissioner, assisted by Captains F. Nash and R. S. Clift, as assessors. The evidence showed that the vessels sailed from Montreal on the afternoon of July 28, the Crown of Cordova in water ballast bound to Quebec to load, and the Lady of Gaspe bound to Gulf ports, with freight and passengers, and continued in sight of each other after leaving Montreal, the Lady of Gaspe being ahead. On passing Three Rivers, the vessels appear to have been about a mile apart, and shortly after this the Lady of Gaspe, seeing that the Cape Magdeleine range lights were obscured by fog, and apparently having lost her bearings on this account, decided to anchor, which was done with the vessel's head still down stream, and also without any regard to the fact that the Crown of Cordova was astern, the result of this action being, the latter vessel, seeing that she was closing in on the stern light of the other, which was then on her starboard bow, immediately stopped her engines. It would appear that the speed of the Lady of Gaspe was such that the anchor when let go, with about 15 fathoms of chain, dragged for some time before it had any effect in swinging her, the helm remaining amidships, so that the Crown of Cordova not being aware that the Lady of Gaspe had anchored, made an attempt to pass her to the northward, or on her own starboard side; but as the Lady of Gaspe was then commencing to swing to the current, with her head to the northward, and opening up her port side, this action was not considered prudent, and as a collision was then seen to be inevitable, the engines of the Crown of Cordova were put full speed astern; but the two vessels came together, the Lady of Gaspe being struck at an angle nearly amidships by the stem of the other vessel. On the vessels clearing each other the Crown of Cordova anchored and sent her boats to assist in taking off the passengers and crew of the Lady of Gaspe, which vessel had been beached on the north shore. Both vessels received considerable damage, which necessitated their being put in dry dock for repairs. The evidence shows that after the collision, the Second Officer and several of the crew, and also several male passengers of the Lady of Gaspe were found to be on the forecastle head of the Crown of Cordova, having climbed on board when the vessels were together, and there is nothing to show what their motive for going there was other than self preservation.

The court, in view of the evidence adduced, is unanimous in its opinion that the Lady of Gaspe is alone to blame for the casualty, inasmuch as she anchored in mid-channel without any regard to the fact that the Crown of Cordova was astern, and appears not to have even taken the trouble to look astern to find out where the other vessel was, nor did she use any of the sound signals prescribed by the Rules of the Road. The fact that the anchor was let go with the speed of the vessel almost unchecked, and with a three knot current astern, and that no effort was made to cant the ship either one way or another with the helm, shows a total lack of seamanship. The court severely criticizes the extraordinary absence of discipline on this vessel, carrying over 130 passengers. It appears that the Lady of Gaspe was being navigated by a man who was signed on the articles as wheelsman,—Elucipe Belanger,—who acted as pilot, lookout, and in charge generally; who steered his courses entirely by the buoys and range lights, and lost his bearings directly the fog and mist shut in the lights ahead, and who did not use the compass. The court therefore severely censures the Master, Cleophas Vezina, for his want of supervision, and in not having a proper watch kept, and lookout set, and properly organized boat stations in case of accidents; but as he took very prompt and proper action in putting his vessel on the bank when he found her sinking, and thereby probably saved the lives of many of the passengers, does not deal with his certificate. The court is of opinion that the cowardly conduct of Joseph Gauthier, the Second Officer of the Lady of Gaspe, in leaving his ship at the time of the accident, shows that he is not a fit and proper person to hold an officer's position. The court therefore cancels his mate's certificate, 5073. The court expresses its approval of the conduct of the master, officers and crew of the Crown of Cordova, and of the efficient manner in which the boats of that vessel were brought into use in the landing of the passengers of the Lady of Gaspe.

New Welland Ship Canal Construction.

The contract for the construction of section 3 of the Welland Ship Canal has been awarded by the Dominion Government to O'Brien and Doheny, Montreal. This section covers the heaviest portion of the whole route, and includes the erection of twin guard gates at Thorold, the single lock 7, the construction of a short stretch of canal below lock 7, and also of the three twin locks 6, 5 and 4 in flight, one flight for downward vessels, and the other for upbound vessels, thus saving long delays in the passage of vessels through the canal. These three locks overcome a descent of 139½ ft. The cutting from sec. 3 will be used in the construction of the breakwater in sec. 1, the Lake Ontario end, which is under contract to the Dominion Dredging Co. It is reported that the amount involved in the contract will approximate $9,500,000.

A full description of the new ship canal route was given in Canadian Railway and Marine World for July, and details of the locks in the September issue.

The number of ocean going steamships arriving in Montreal harbor during August, was 72, against 56 in August, 1912, and the total number of vessels arriving from the opening of navigation to the end of August, was 300, against 245 for the same period 1912.

Lake Shippers Clearance Association Annual Report.

At the annual meeting in Winnipeg, Aug. 28, the following report was presented:—"The operation during the last year has been very successful. We have handled 35,000,000 bushels more grain than last year and 87,000,000 more than the previous year, which is absolute proof that the association is of great benefit to both the vessel owners and shippers, and, further, that every exporting or shipping firm in the Winnipeg Grain Exchange are now members of this association.

"We again show a surplus over expenses. I would like to draw the attention of all the members present to how the surplus was accumulated during the present year, and to the remarks that I made at the last general meeting, 1912, in which I stated that the surplus during that year had been principally obtained from storage saved, and in looking over the financial statement this year you will see that the amount of fees received from the vessel owners and shippers is not enough to cover the running expenses of our association, and we show a deficit. We will be put to a larger expense this year as we have a private wire now betwen the Winnipeg and Fort William offices, and this wire is used by the vessel agents and shippers, and will no doubt be a great saving to them in their telegraph account, also it puts them in direct communication with the Fort William office, and our books are at all times open to the vessel agents to find out as to the loading of their boats and what dispatch they are getting, and in view of the above facts I cannot see how we can in any way reduce the charges that are now being paid by both the vessel owners and shippers. The money that we save on storage is money that entirely belongs to the shippers, and, in fact, it looks as if some of this money would have to be used to cover the operating expenses.

"Our fees for loading boats are based on the dispatch given the boat, and since our last annual meeting a conference was held between your board, representing the association, and representatives of the Dominion Marine Association, at which the basis of charges made for service rendered by this association to boats was completely changed. The Dominion Marine Association apparently felt that in some way the storage saved by this association in the course of its operation was saved at the expense of the boats, and notwithstanding assurances and evidence submitted by your board to the contrary, the marine representatives remained unconvinced. In urging the acceptance of the new schedule based on dispatch entirely, they pointed out that if it was accepted it would definitely clear up the only question at issue between the two associations and that the marine association would not be interested in any way in the question of storage or any surplus obtained by this association from that source. After considerable discussion, although it was felt that the change was a radical one, still as it was being considered as a final disposition of all questions at issue between the two associations, and disposed of any doubt in the minds of the marine interests regarding the question of surplus arising through storage saved by the clearing of documents, the schedule of the Dominion Marine Association was accepted and agreement entered into by the representatives of both associations covering same.

"We recommend that the entrance fee for membership be advanced to an amount commensurate with the increase in the reserve fund."

The Manager submitted the following report:—"I submit for your consideration, auditor's report and statement of the business for the year ended July 31. A ll the balances at the credit of the different firms have been confirmed. The actual warehouse receipts representing the grain held by the association have been confirmed by the elevator companies, and the accounts balanced to a pound, and all carefully checked by the auditors.

"During the past year, the association shipped 1,326 cargoes by vessel. The total quantity shipped of all kinds of grain amounted to 155,335,881 bush. out of the crop of 1912, as against 134,653,000 out of the crop of 1911, 62,065,000 out of the crop of 1910, and 74,440,000 out of the crop of 1909, the quantity shipped this year being over twice as much as the quantity shipped out of the 1909 crop. In addition to the quantity of grain actually shipped, the association handled transfers aggregating 13,698,977 bush. These figures show the appreciation by the trade of the advantage of using the association transfers, and are ample evidence of the advantage of delivering grain by transfer as against delivering actual warehouse receipts. This would be materially increased if the transfers were made deliverable on the option.

"In handling the crop of 1911, a considerable quantity had to be forwarded through Duluth, owing to congestion at the Canadian head of the lakes. The fact that the 1912 crop was a much larger one and the facilities at the Canadian lake ports not materially increased presented a problem that called forth the best efforts of all concerned in the forwarding of the crop. The Board of Grain Commissioners took the matter up energetically. The government was induced to spend a large sum of money in keeping the harbor open until late in the fall, and again in opening it early in the spring. Arrangements were made to have a large quantity of floating tonnage winter at the port available for winter storage, and arrangements also made under which United States boats would have the option of delivering their cargoes at Canadian ports in the spring. These arrangements were taken advantage of by the shippers, and this, combined with the extraordinary work done by the railway companies, resulted in a much smaller quantity of the 1912 crop being forwarded through Duluth than was forwarded of the crop of 1911, notwithstanding the fact that the 1912 crop was a much larger one.

"The facilities for handling the 1913 crop have been materially increased. New terminal elevators, and additions to those in operation a year ago will increase the storage capacity at the head of the lakes to over 40,000,000 bush. The railways have spent enormous sums of money increasing their terminals, rolling stock, etc., and consequently we are facing the problem of handling the present crop much better equipped than we have ever been before.

"The bulk of the grain handled last year was handled under the new schedule of boat charges agreed to between this association and the Dominion Marine Association, and the result shows that the average charge per cargo loaded was only $23.20, a very small charge indeed for the service rendered, when it is considered that a day saved to one of the large boats is worth as much as $1,000. However, since the new schedule has been adopted, we have not had a single complaint from a boat owner, which is a great source of satisfaction.

"Since the last annual meeting, the association has installed a private wire between our offices at Fort William and Winnipeg. This is proving a great advantage to the boats as well as to the shippers. However, this wire will increase the expense of the association about $12,000 a year without any additional charge to the boats, and as the present fees barely cover the operating cost, this expense practically falls on the shippers' end of the association and may very materially effect any future surplus."

The balance sheet showed a surplus of $32,619.58 of income over expenditure. This surplus was obtained chiefly from storage saved, there being a deficit of $3,241.49 on the shipping account, the income thereon being commissions from shippers, $31,027.93; from vessels, $30,781.35; total, $61,809.28. Operating expenses on the same account were Winnipeg, $41,401.41; Fort William, $22,083.38; Duluth, $1,565.98; total, $65,050.77. Other sources of revenue on operating account returned:—Storage, $30,113.32; commission on warehouse receipts, $1,666.70; interest on bank balances, $4,081.05; total, $35,619.58.

STATEMENT OF SHIPMENTS

	Season 1912-13	Season 1911-12
Wheat—	Bush.	Bush.
Vessel	96,118,450.00	83,430,452.00
Rail	5,215,806.00	8,302,969.00
Duluth	1,142,206.00	4,023,454.00
Transfers	8,027,815.00	....
Oats—		
Vessel	24,808,071.00	21,785,979.00
Rail	2,356,828.00	4,533,605.00
Duluth	969,773.00	4,271,543.00
Transfers	3,550,641.00	....
Barley—		
Vessel	7,562,447.00	2,516,949.00
Rail	959,189.00	235,808.00
Duluth	117,511.00	447,446.00
Transfers	1,289,899.00	....
Flax—		
Vessel	14,964,743.00	3,673,842.00
Rail	703,150.00	1,386,852.00
Duluth	427,707.00	43,539.00
Transfers	830,622.00	....
Total—		
Vessel	143,543,711.00	111,407,222.00
Rail	9,234,973.00	14,459,234.00
Duluth	2,557,197.00	8,785,982.00
Transfers	13,698,977.00	....
	169,034,858.00	134,652,438.00

Following are the directors for the current year:—President, Capel Tilt; Vice President, H. T. Stewart; other directors, A. K. Godfrey, R. M. Wolvin, C. C. Field; Treasurer, Jno. Fleming; Secretary, A. C. Ruttan.

Kenora-Fairmount Collision.

The Dominion Wreck Commissioner, Commander H. St. G. Lindsay, assisted by Capts. F. Nash and J. McGrath, as assessors, investigated the collision between the steamships Kenora and Fairmount, July 12, near the Lachine Canal entrance locks, the stern of the Fairmount being damaged by being hit by the Kenora, which, after glancing off the Fairmount, ran stem on into the dock wall, considerably damaging her stem.

The court found that the cause of the collision was admitted without question to be through a mistake made by the engineer on the Kenora in putting the engine full speed ahead instead of full speed astern, and the court was unanimously of opinion that if the order had been correctly executed, no collision would have occurred. There was nothing in the evidence to show what caused the serious mistake on the part of the engineer, and the Kenora was found to be, alone, to blame for the casualty. Both masters were exonerated from blame. The master of the Kenora having done all he could to avert the accident, he can in no way be held responsible for the mistake in the engine room, and the master of the Fairmount, seeing that he was handicapped by having a light vessel and being obliged to use his anchor to cant his vessel's head, owing to the direction of the wind, could not, under the circumstances, have done otherwise than he did to try and avoid the collision when he saw that it was inevitable. The court is of opinion that some special regulation is necessary to deal with cases of this description, so that each vessel may know which has the right of way into the canal locks, as it considers that the Rules of the Road do not extend to such cases.

The Prince Edward Island Car Ferry's Forward Propeller.

In the description in Canadian Railway and Marine World of September, of the car ferry steamship, which is being built at Newcastle upon Tyne, Eng., to run between Cape Tormentine, N.B., and Carleton Point, P.E.I., it was stated that a feature of the vessel which will be a new one on icebreaking steamships in Canada will be the forward screw, a feature which was first introduced in the Russian icebreaker Ermack. We were aware, however, that the Ermack had been altered, that she had returned to the Tyne, where her forepart was cut away completely, together with her propeller and its tube and that she had been fitted with a new bow, we communicated with Sir W. G. Armstrong, Whitworth & Co., who built the Ermack and who are building the P.E.I. car ferry and they have replied as follows:—

"The Ermack was originally built with a forward propeller, with a view to service in the Baltic, where it was found to be of considerable value in breaking up the pack ice which is always to be found there. After a certain amount of work in the Baltic, it was decided to attack the ice within the Arctic Circle, and on the first voyage in that part it was found that the bow propeller, useful though it was in the Baltic, was a positive hindrance to the vessel when attacking field ice, which often attained a thickness of 14 ft., and was of exceptional density and strength. It was, therefore, decided to take it off and alter the form of the bow.

"The car ferry is not, of course, intended for service amongst ice such as that encountered by the Ermack in the Arctic Circle, but will constantly have to face conditions which are more analogous to those of the Baltic Sea, where the bow propeller was found, not only in the Ermack, but in two later icebreakers—the Sampo and the Tarmo—to be of great value. Apart from this, the special manoeuvring which would be required in this vessel will make a forward propeller extremely useful, especially as we foresee circumstances in which, owing to the jam of ice in the landing ports, it may easily be that the two stern propellers are stopped, and the forward propeller will then be available to extricate the ship from her position and enable her to move out so as to attack the ice again.

"We have had experience of railway work amongst the ice on the large railway ferry steamship Baikal, which—as you are aware—carried the whole of the trains of the Siberian Railroad across the great inland lake, after which it was named, until the railway round the edge was completed. It is this experience upon which we have drawn in designing the car ferry."

The Dominion will be represented at the international conference to enquire into measures for the guarding of life at sea to be held in London, Eng., during November. The Department of Marine has been cooperating with the British Board of Trade in drawing up regulations for such purpose, and Canadian steamship lines have been asked as to what further safeguards ought to be adopted. These will form the chief topic for discussion at the forthcoming conference.

Atlantic and Pacific Ocean Marine.

The White Star-Dominion Line is reported to have ordered two additional [illegible] at Belfast, Ireland, for its Canadian servi It is stated that they will be 590 ft. lon and about 16,000 tons gross. They are larger than the Laurentic and Megantic which th company operates at present on that rout

The s.s. Devon, which sailed from Montreal, May 31, for New Zealand and Australian ports, is reported to have run ashor off Pencarrow Head, near Wellington, New Zealand, and to be considered as a total loss. She was built at Hebburn-on-Tyne, Eng., in 1897, her dimensions being, lengt 420 ft., breadth 54 ft., depth 28½ ft.

The New Zealand Line s.s. Whakatane, which recently grounded in the St. Lawrence, near where the Allan Line s.s. Bavarian was wrecked some years ago, was only slightly injured. She was docked at Levis for repairs, after which she proceeded to Montreal to load for New Zealand, and it was expected that she would be able to sail on her schedule date, Sept. 30.

The recent enquiry by the Dominion Wreck Commissioner, into the cause of the collision between the Elder-Dempster s.s. Bendu and a Dominion Government tug, has been adjourned sine die, owing to the difficulty of obtaining evidence, the captain in charge of the Bendu at the time of the collision having been replaced by another, and was therefore not available as a witness.

The Thomson Line s.s. Cairnross, which recently arrived at Montreal from Middlesbrough, Eng., has propelling machinery, which it is claimed is being used for the first time on a trading vessel. A turbine, such as is used on land in connection with dynamos, is connected to the single screw propeller, with the result that a saving of 15% is effected in the quantity of coal consumed. It is stated that the results have been entirely satisfactory.

Press reports from the Pacific coast state that the C.P.R. has placed a new wage schedule in force on the Transpacific steamships, averaging about $20 a month increase for the officers on its vessels. It is also stated that the bringing of the management of the Transpacific vessels under the one head with the Transatlantic ones, allows of transfers of officers when openings occur for promotion.

The Atlantic Transport Line is having built at Belfast, Ireland, a triple screw vessel, to be called the Minnekahda, which will be 620 ft. long, 66 ft. beam and 16,000 tons register. All outside rooms are to be equipped with hot and cold running water, and there will be an elaborate lounge and verandah cafe. She will make the voyage between London and New York in eight days, and is expected to be in service early in 1915.

The Dundee whaling steamship Scotia, which has been engaged in patrolling the northern Atlantic route, since the early party of the year, with the view of obtaining data as to breaking up of pack ice, and the movement of the ice floes, has been withdrawn from the service, the object for which it was engaged having been attained. It is stated that a lot of interesting and valuable information has been obtained, and the experiment has been a complete success.

It is announced that Pickford and Black, Limited, who have the contract for the mail steamship service between Canada and the West Indies, have chartered the Norwegian s.s. Uller for temporary purposes. The contract called for the addition of two fast steamships to the mail route by July 1, and efforts were made in Great Britain to charter the necessary vessels, but on account of the dearth of suitable tonnage at reasonable prices, the contractors were not successful.

In view of the remarks frequently made and quoted by interested parties, derogatory to the St. Lawrence route, it is interesting to note that in a report recently received in Montreal from the British Board of Trade, several matsers of British vessels, in giving evidence in an enquiry into the rules for the location and disposing of derelicts, stated that the system in vogue on the St. Lawrence, of communicating by wireless telegraphy with all stations and thence to vessels in port or in the vicinity, is the best that could be devised.

Press reports from Vancouver state that the Union Steamship Co., operating the mail steamship service between Canada and New Zealand and Australia, is to be reorganized with a capital of £3,000,000, divided into 3,000,000 shares of £1 each, and that the present company will be taken over, the new company assuming all liabilities, and paying the cost of winding up the present company and of forming the new one. The old name will be retained, the scheme merely being an increase of capital and an enlargement of powers.

On account of the anticipated increase in shipping into, and out of, Halifax, N.S., during the winter season, the transportation committee of the Board of Trade, recently applied to F. P. Gutelius, General Manager, Canadian Government Railways, to place temporary sheds, approaches, etc. on the no. 2 pier, at present under construction, so that two additional berths would be available at once. It is reported that this has been agreed to. About 370 ft. of the total 700 ft. of the pier has been completed, and the foundations of the sheds are finished.

H. Maitland Kersey, the recently appointed Manager in Chief of the C.P.R. Transatlantic and Transpacific Steamships, who was in Victoria recently in connection with the arrival of the s.s. Empress of Asia on her maiden trip from Great Britain, with a party of round the world by the C.P.R. tourists, stated that there was no truth in the report that the C.P.R. intended to dispose of the steamships Empress of India and Empress of Japan. They will remain on their present routes, at any rate, until it is seen to what extent transpacific travel is affected by the new vessels.

It is reported that the Donaldson Line has acquired from the Allan Line, its steamship service between Glasgow and Liverpool, and the River Plate, Monte Video and Buenos Ayres. It was announced some time ago that the Allan Line was to retire from the River Plate trade. This announcement, in conjunction with other happenings associated with the Allan Line, indicate that the anticipated control of the Allan Line by the C.P.R., will shortly be announced as an accomplished fact. In response to enquiries recently, Sir Thos. Shaughnessy is reported to have stated that an announcement of interest in this connection would shortly be made.

In our last issue, we stated that the French Line s.s. La Touraine, between Montreal and Havre, had discontinued the service, owing to lack of freight. It has been pointed out that this is liable to be misconstrued into meaning that the company has abandoned the service entirely. We have been advised that the item referred to is accurate in so far as stating that La Touraine will not return to Montreal this year. The regular monthly sailings between Quebec and Havre are being continued as during the past season, and the company has announced sailings for 1914, showing eight sailings from Quebec and three from Montreal, including La Touraine, during the St. Lawrence season. The company has no intention of abandoning its service on the St. Lawrence route.

Montreal press reports of Sept. 16, state that the scheme for establishing an express service between Great Britain and Australia, by way of Canada, would seem to be making rapid progress, as the contract for the construction of two 25 knot steamships has been awarded, and that work on the railway between Blacksod Bay and Collooney, Ireland, to link up the Irish railway system, was to be commenced in September. In Canada, the reports continue, a harbor is ultimately to be built at Cape Charles, on the southeast coast of Labrador, which will be the terminus of a new transcontinental railway, a very doubtful statement. At first, vessels will run from Blacksod Bay to Montreal in the summer, and to Halifax in the winter, and there will also be a connecting steamship service between Vancouver, or Prince Rupert, and New Zealand and Australia, so that it will be possible to reach Australia within three weeks of leaving London, Eng. The reports do not state to whom the contract for the two vessels has been awarded, nor by whom it has been awarded, and in view of the repeated rumors to the same effect, which have always been followed by denials of all those who could be intimately concerned, and also of the fact that it is extremely unlikely that any definite steps will be taken until, at least, British Government aid is assured, we would hesitate to place any reliance on the statement. A later report states that the contract for two vessels has been awarded provisionally to Swan, Hunter and Wigham Richardson, Wallsend-on-Tyne, Eng.

Maritime Provinces and Newfoundland.

The Dominion Government has awarded contracts for dredging at Cheticamp, N.S., to the Northern Dredging Co., and for an extension to the wharf at Hants Point, N.S., to the Standard Construction Co.

During the construction of an extension to the Souris East breakwater, P.E.I., the light heretofore exhibited from the lighthouse tower will be discontinued, and a temporary fixed red light will be maintained by the contractor, on the outer end of the work. On completion of the extension, the lighthouse tower will be moved to the outer end, and the light again placed in operation.

The lightship, maintained by the Department of Marine, on Lurcher Shoal, off Yarmouth, N.S., was to be removed from her station, Oct. 1, to undergo necessary repairs. During the absence of the lightship the station will be marked by a combined gas and whistling buoy, painted red and showing an occulting white light. It is expected that the vessel will be replaced early in November.

The dredge E. B. no. 1, owned by V. T. Bartram, Toronto, while on her way from Souris to Rustico, P.E.I., sank during a storm, about 12 miles from Rustico, becoming a total loss with her three scows. The crew were saved by the attendant tugs. The dredge was built in the U. S., her dimensions being, length 67 ft., breadth 26.5

List of Steam Vessels Registered in Canada during August, 1913.

No.	Name	Port of Registry	When and Where Built	Length	Breadth	Depth	Gross Tons	Reg. Tons	Engines, Etc.	Owner or Managing Owner
[illegible]	[illegible]	[illegible]	[illegible] Greenock, Scotland	79 9	22 1	11 4	137	9	54n.h.p. sc.	Sincennes-McNaughton Line Ltd., Montreal.
[illegible]	[illegible]	[illegible]	[illegible] Kingston, Ont	142 [illegible]	27 0	12 0	417	216	118 " "	Minister of Marine and Fisheries, Ottawa.
[illegible]	[illegible]	[illegible]	[illegible] Leith, Scotland	230 0	34 1	19 7	[illegible]	792	99 " "	Corunna Shipping Co., Halifax, N.S.
133744	Mohawk Belle..	[illegible]	1913 South Portage, Ont....	94 0	19 5	7 [illegible]	167	103	12 " "	Huntsville, Lake of Bays and Lake Simcoe Navigation Co., Huntsville, Ont.
[illegible]	Nasookin......	Vancouver, B.C....	1913 Nelson, B.C..........	[illegible]	[illegible]	[illegible]	[illegible]	1035	101 " p.s	Canadian Pacific Ry. Co., Montreal.
[illegible]	[illegible]	[illegible]	[illegible] Leith, Scotland	230 0	34 1	19 [illegible]	1270	794	99 " sc	Nevada Shipping Co., Halifax, N.S.
135779	Orchard City..	Victoria, B.C....	1912 Kelowna, B.C.........	86 6	19 0	6 7	107	73	16 " "	Kelowna Saw Mill Co., Kelowna, B.C.

List of Sailing Vessels and Barges Registered in Canada during August, 1913.

No.	Name	Port of Registry	Rig	When and Where Built	Length	Breadth	Depth	Reg. Tons	Owner or Managing Owner
[illegible]	[illegible]	Weymouth, N.S	[illegible]	[illegible] Meteghan, N.S	117 0	30 6	10 8	[illegible]	F. K. Warren, Halifax, N.S.
[illegible]	[illegible]	Kingston, Ont..	Dredge...	[illegible] Prescott, Ont	81 0	30 0	[illegible]	109	J. J. Fallon et al., [illegible], Cornwall, Ont
[illegible]	[illegible]	[illegible]		[illegible]	100 0	[illegible]	10 5	[illegible]	Minister of Marine and Fisheries, Ottawa
[illegible]	[illegible]	[illegible]	[illegible]	[illegible] Tancook, N.S.....	40 0	10 0	5 2	10	H. Baker, Lunenburg, N.S.
[illegible]	[illegible]	[illegible] P.E.I	Dredge	[illegible]	90 0	[illegible]	8 0	368	Minister of Public Works, Ottawa
[illegible]	[illegible]			1871 Summerside, P.E.I	81 0	[illegible]	7 2	244	" " " "
[illegible]	[illegible]			1911 Pugwash, N.S.....	64 7	24 9	[illegible]	192	" " " "
[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	43 0	[illegible]	[illegible]	Minister of Railways and Canals, Ottawa
[illegible]	[illegible]	New Westminster, B.C	Barge	1913 New Westminster..	59 7	20 0	4 0	[illegible]	W. A. Gilley, New Westminster, B.C
[illegible]	Queensboro Two..			[illegible]	60 4	16 0	4 3	[illegible]	" " " "
[illegible]	[illegible]	[illegible]	Dredge	1913 Morrisburg, Ont..	[illegible]	31 5	7 3	[illegible]	Roger Miller & Sons, Toronto.
[illegible]	[illegible]	[illegible]	Barge	[illegible] Victoria, B.C	[illegible]	32 0	8 0	[illegible]	Victoria Tug Co., Victoria, B.C.
[illegible]	[illegible]	[illegible] N.B	Schr...	[illegible] N.B	[illegible]	10 0	4 5	11	T. C. Russell, Shippigan, N.B.
[illegible]	[illegible]	[illegible]	Barge..	1895 Cleveland, O.	302 0	40 2	[illegible]	1951	J. Whalen, Port Arthur, Ont.

ft., depth 5.3 ft., tonnage 139 register. The loss was partly covered.

The Dominion Atlantic Ry. s.s. Prince Rupert, which has been operated in the Bay of Fundy service for several years, is reported to have been sold to a West Indies syndicate for a local West Indies service. She has been replaced by the turbine s.s. St. George, which was recently purchased in England by the C.P.R. for the service, a full description being given in Canadian Railway and Marine World for September.

The Public Works Department dredge P. W. D. 2, has been recently completed at St. John, N.B., and has left for the St. John River, where she will be operated for some time. She is 110 ft. long, 30 ft. beam and 3½ ft. draught. The equipment includes a 15 ins. suction pipe and 16 ins. discharge pipe, centrifugal pumps, triple expansion vertical engines supplied with steam by a Scotch marine boiler 10 by 12 ft., and 30 steel pontoons 30 by 10 ft. will carry the discharge pipe to the shore.

J. T. Ross, President, Quebec Steamship Co., is reported to have stated recently that the negotiations respecting the taking over of the company by Canada Transportation Lines, Ltd., had been completed, and all that remained to complete the deal was the turning over of the securities. The company owns the steamship Cascapedia, which runs between Montreal, Gaspe, Malbaie, Perce, Summerside, Charlottetown and Pictou, and it also operates a steamship service between New York and the West Indies, with the steamships Bermudian, Guiana, Parima and Korona, and during the summer season runs the s.s. Trinidad between Quebec and New York.

Province of Quebec Marine.

The Quebec Board of Trade has addressed a memorial to the Dominion Premier on the question of grain transportation and elevator storage capacity at the various Canadian ports.

It was reported that the level of water in the ship channel at Montreal, Sept. 12, was at the lowest point this season, season, the sounding showing 30 ft. 2 ins. The depth at the lock sill of the Lachine Canal was 14 ft. 10 ins.

The first section of the crib work, 200 by 55 ft., for the building of the new bulkhead pier in the St. Charles River, was sunk at the end of August. This is a portion of the improvement work being carried on in the Quebec harbor.

The Montreal Harbor Commissioners have filed plans at Ottawa for the construction of two freight sheds at a cost of $300,000. One of the sheds will be 275 by 106 ft., and the other, 485 by 112 ft., and each will be two stories high. Their location will be in secs. 24 and 25 of the Commissioners' wharves.

A London, Eng., press dispatch of Sept. 12, states that Canadian Vickers, Ltd., have placed an order with a Glasgow, Scotland, firm, for the construction of a large shipbuilding shed for Montreal, capable of accommodating a vessel 888 ft. long, and that orders have also been placed for ship building machine tools, etc.

The Gaspe Steam Ship Co., Ltd., has been incorporated under the Quebec Companies Act with $100,000 capital and office at Quebec, Que., to build, own and navigate steam and other vessels, and to carry on the business of common carrier, hotel keeper and general merchant. The incorporators are: Ed., F., J. A., and Emile Bouchard, vessel owners, and R. Plamondon, accountant, all of Quebec.

The Montreal Board of Control has made an appropriation of $1,500 for a report by a qualified person, on the proposal to operate municipal ferry steamboats to St. Helens Island. The contract for the existing service expires May 1, 1915, and the report now desired is to cover the type of vessels required, the probable location of docks, etc., and an estimate as to the cost of the whole scheme.

During the construction of an extension to the east pier at the upper entrance to the Soulanges Canal, by the Department of Railways and Canals, the Marine Department has placed a gas buoy, temporarily, off the outer end of the works. The extension runs out about 1,200 ft. from the present end of the east pier, and dredging is in progress north of the present channel at the upper entrance to the canal.

The Conservation Commission, which recently conducted an investigation into the proposal of the Long Sault Development Co. to dam the St. Lawrence River at Barnhart and Sheek Islands, for the development of electrical power, has reported against the proposal. It is stated that the proposed dam would cause a diversion of about 50% of the water from the main navigable channel between Barnhart Island and the U.S. mainland.

Ontario and the Great Lakes.

The Northern Navigation Co.'s s.s. Doric carried the first cargo of this year's grain crop, from the head of the lakes, consigned to Goderich.

The contract for the dredging of the channel between Goat Island and Little Current, Manitoulin Island, has been awarded to the Sault Dredging and Construction Co.

The Dominion Government has awarded the contract for the erection of a double track railway bridge over the Welland Canal, to the Hamilton Bridge Co., for $65,800.

The contract for the construction of the Severn Division of the Trent Valley Canal, has been awarded by the Dominion Government to the York Construction Co., for $130,278.

The s.s. Glenfoyle, which has recently been completed at Londonderry, Ireland, for the Great Lakes trade, is a sister vessel of the Glenmavis, a full description of which, with illustrations, was given in our last issue.

Depot Harbor Elevator Co., Ltd., has been incorporated under the Ontario Companies Act, with $40,000 capital and office at Toronto, to carry on an elevator, storage and warehouse business, and to deal generally in grain and grain products.

Complaint has been made in Buffalo, N.Y., as to the rates charged by the Buffalo and Fort Erie Ferry Co., and the matter has been referred to the International Joint Commission. It is claimed that while at Fort Erie the rate is 40 tickets for $1, single fares at 5c. have to be paid at the Buffalo end.

The large suction dredge Port Nelson, recently built by the Polson Iron Works, Toronto, for Dominion Government work in Hudson Bay, is on the last stage of her journey to Port Nelson, where she is expected to arrive about the middle of October. A heavy risk was assumed by the underwriters for her safe arrival.

Montreal daily papers, Sept. 4, announced that the Richelieu and Ontario Navigation Co. had acquired the s.s. C. A. Jaques, owned by the Jaques Transportation Co. of Ottawa, and operated by the Merchants Montreal line, under the management of G. E. Jaques and Co., Montreal. As an item of news, this is somewhat ancient, the details having been published [illegible] Canadian Railway and Marine World.

A press report from Port Arthur states that on the close of navigation the C.P.R. steamships Alberta and Athabasca will be docked there for the winter and thorough overhauling and general repairs undertaken during the winter. It is stated that both vessels will have new boilers and accessories and a number of improvements, at an approximate cost of $65,000.

The U.S. Lake Survey reports the levels of the Great lakes, in feet above tidewater, for August, as follows:—Superior, 602.74; Michigan and Huron, 581.24; Erie, 573.24; Ontario, 247.31. Compared with the average August levels for the past ten years, Superior was 0.03 ft. above; Michigan and Huron, 0.25 ft. above; Erie, 0.58 ft. above; and Ontario, 0.64 ft. above. It was anticipated that during September, Superior would rise 0.1 ft.; that Michigan and Huron would fall 0.1 ft., Erie 0.2 ft., and Ontario 0.4 ft.

The Dominion Government elevator at Port Arthur, which has recently been completed, was expected to handle its first grain shipments towards the end of September. The structure is of reinforced concrete throughout, except in the walls of the working house, where brick panelling has been used. The machinery will be operated by electricity, a separate motor having been installed for each machine. The normal loading capacity is about 75,000 bush. an hour for vessels. Twenty cars can be unloaded at one time, and the capacity is about 40 cars an hour.

The daily press is again busy with reports that the Canadian Northern Ry. is about to establish a freight and passenger steamship service on the Great Lakes, and it is now stated from Port Arthur that a contract will shortly be closed there for the construction of two passenger vessels for such service, each of which will be larger than any passenger vessel at present operating on the Great Lakes. As pointed out in previous issues of Canadian Railway and Marine World, a steamship service on the Great Lakes is a natural corollary of the completion of the transcontinental line, and no doubt, frequent anticipation will eventually produce the reality. In the meantime the advice to "wait and see," which has frequently been given in political circles, will apply.

The Keystone Transportation Co.'s s.s. Keystorm, which was wrecked in the St. Lawrence last year, and which is lying in deep water near Kingston, Ont., is to be raised. The vessel was abandoned to the underwriters, who have arranged with A. J. Lee, Westmount, Que., to undertake the salvage work. The position in which the vessel is lying, makes the work difficult, as her stern is in 102 ft. of water, and she is on her side. Compressed air is to be used to raise the vessel, and it is expected that as soon as she is buoyant, she can be moved in about three lengths into comparatively shallow water, where further work can be carried on under more favorable conditions. We are advised that the general salvage gear has been arranged for in Quebec, divers engaged in Halifax, N.S., and air locks and compressors will be obtained from New York.

On account of the completion of the deepening of the eastern half of the Ballard Reef channel in the Detroit River, and the commencement of the deepening of the western half, south of the junction with the Livingstone Channel, the buoys marking the improved channel for upbound vessels at Ballard Reef, have been moved about 250 ft. eastward, and upbound vessels now use the eastern half of the channel from Limekiln Crossing to the head of the reef. From the junction with the Livingstone Channel north, the entire width of 600 ft. at Ballard Reef is in use by vessels. Upbound vessels in passing through the east half of the channel will be guided by the buoys and not by the Fort Malden range on the Canadian shore, the latter having been discontinued, temporarily, and upbound vessels are prohibited from meeting downbound vessels at the junction with the Livingstone Channel.

British Columbia and Pacific Coast Marine.

The contract for the construction of a snag boat for the Government has been awarded to the Coquitlam Shipbuilding Co., Port Coquitlam.

The G.T. Pacific Coast Steamship Co.'s s.s. Prince John will probably be taken off her route about the end of October, when she will be overhauled generally, and oil burning apparatus installed.

The Alberta Pacific Elevator Co. has purchased the Brown Howey Co.'s grain elevator at Vancouver, and it is announced that a considerable proportion of the new grain crop will be shipped by the Pacific route.

The Border Line Transportation Co.'s s.s. Despatch, running in conjunction with the s.s. Fulton, between Seattle, Tacoma, Victoria and Powell River, is to be remodelled so as to increase the freight carrying capacity.

The wreck of the Pacific Coast Steamship Co.'s s.s. Curacao, lying submerged off Warm Chuck, Alaska, has been sold to the Vancouver Dredging and Salvage Co., for $4,000, and arrangements also made for salving the cargo on a 75% basis.

Navigation Dredging Co., Ltd., has been incorporated under the British Columbia Companies Act, with $50,000 capital and office at Vancouver, to carry on a general dredging business, and to own and operate steam and other vessels, and act as common carrier.

The Public Works Department will shortly call for tenders for the construction of two piers for the outer harbor works at Victoria. It is also announced that the Department has sent its Purchasing Agent from Ottawa to Victoria, to arrange for the purchase of the site for the proposed Government dry dock at Esquimalt.

The G. T. Pacific Coast Steamship Co.'s s.s. Prince Albert was reported to have been in collision with the Canadian Fishing Co.'s s.s. Flamingo, early in September, in the Johnstone Strait. It was stated that the collision was not a serious one, both vessels being able to proceed without assistance, and with only minor damage.

The Dominion Government quarantine dock at Digby Island, off Prince Rupert, has been completed and handed over by the contractors, Naylor Bros. The contract price for the building was $60,000. It consists of two approaches, one being 910 ft. long, and the other about 700 ft. long, with a dock 500 ft. long by 40 ft. wide at the end.

The second vessel which the C.P.R. recently ordered at Port Arthur, Ont., for its British Columbia Lakes and River Service, has been completed, and is being taken apart and packed for shipment to Nelson, B.C., where she will be reassembled. She is a sister vessel of the Nasookin, details of which were published in Canadian Railway and Marine World for June.

A report from San Francisco states that the Great Northern Ry. intends to offer strenuous competition to the Southern Pacific Co. for the traffic that will result from the completion of the Panama Canal and the opening of the Panama-Pacific International Exposition in 1915. Two 25-knot turbine steamships are being built for the G.N.R. Co. at Philadelphia. With these ships it is expected that the trip from Portland, Ore., to San Francisco can be made in shorter time than by rail, since trains between the two cities must climb the high Siskiyou mountain range. If a traffic agreement between the Hill lines and the Pacific Navigation Co. is entered into, passengers could travel by sea from Portland, Ore., to Los Angeles, Cal., as rapidly as by rail.

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Toronto Harbor Improvement Contracts.

The Toronto Harbor Commissioners have awarded the contract for dredging in the harbor to the Canadian Stewart Co., Montreal and Toronto, at 19½c a cubic yard, the total of the contract approximating $5,500,000. The work consists of the removal of about 31,000,000 cub. yds. of material, the borings indicate about 70% to be sand and gravel, and 30% a mixture of sand, silt and clay. It is a condition of the contract that each dredge employed in the work must be capable of handling, at least, 600 cub. yds.an hour at the maximum length of discharge. From the source of supply to the point of discharge the maximum distance is about 6,000 ft., the average length of delivery being about 4,000 ft. The direct line of discharge is preferred, but the work may be done in series, or by relays, and continuous operation by day and night will be carried on. The work is to be commenced about March, 1914, and it is estimated that it will take about eight years to complete. The other tenders were as follows: Tilbury Dock and Dredging Co., London, Eng., 24½c a cub. yd., $7,521,500; Sir John Jackson, Ltd., London, Eng., 20½c a cub. yd., $6,293,500; Pearce & Co., London, Eng., and New York, slightly over 20c a cub. yd., about $6,000,000; Sherman, Salter Co., New York, slightly over 20c a cub. yd. for a portion of the work.

The Dominion Public Works Department has awarded a contract for its portion of the improvement work in the harbor, comprising a sea wall from the eastern gap to Woodbine Ave., and a breakwater on the western section of the work to the Humber River, also to the Canadian Stewart Co., the amount of the contract being approximately $5,731,732.12, which is about 10½% below the original approximate estimate for the work.

A. M. Stewart, President, Canadian Stewart Co., stated in Toronto recently that a large plant will be required by his company in connection with the work to be undertaken, comprising four high power sand dredges, bucket dredges, pile drivers, scows, tugs and barges, and orders for such new plant as is required will be placed in Canada, a large portion being probably built in Toronto. He estimates that the plant when operating at full capacity, will deal with from four to five million cub. yds. a year, a large portion of the filling in in Ashbridge's Bay being done with material obtained about 6,000 ft. from the point of discharge. He estimates that work can be proceeded with during about 7½ months in each year, and that the Government portion of the work will be completed in about four years.

The Use of British Manufactures in Canadian Vessel Construction.

In reporting the recent awarding of a contract for the construction of a steamboat for the Department of Marine, the Toronto daily papers stated that a new regulation had just come into force to the effect that hereafter all vessels built in Canada for the Dominion Government must be composed wholly of British products, and gloomy pictures were drawn of the increased cost of construction, and delay in delivery of completed vessels, which would follow on the enforcement of this regulation.

In this connection, we have been officially advised that the Department of Marine has no knowledge of any regulation having been passed under which all vessels built in Canada must be composed wholly of British products, but that it invariably inserts in all contracts for the construction of vessels, that the vessel shall be built, as far as possible, of British or Canadian material, and with a view to seeing that this is done, one of the conditions of a contract is that before any orders are placed for any material whatsoever, the contractor must submit same to the Department for approval.

A Manufacturer's View of Shipbuilding in Canada.

In his address to the Canadian Manufacturers Association at its recent annual meeting in Halifax, N.S., the retiring President, R. S. Gourlay, of Toronto, said:—"The feasibility of building in Canada all or any of our vessels that shall constitute our contribution to the defence of the Empire is a matter which should be left for experts to decide. That we could build them goes without saying, were the question of cost to be left out of consideration. Certain it is, too, that we will never have in Canada naval shipyards worthy of the name unless we sometime make a beginning, and I am sure I am right in crediting you all with a desire to see our country possessed of such equipment at the earliest practicable date. In those industries with which I am familiar, however, the safe and logical development is usually from smaller to greater things, and for this reason I am constrained to believe that Canada would be wise to content itself with the building of smaller vessels and other work incident thereto as a commencement, leaving to the naval yards of England for the time being the task of providing the ships that shall proclaim us a nation."

Marine Diesel Engine Development.—Advocates of the application of the Diesel engine to large vessels, says Dr. L. K. Hirshberg, in Power, are endeavoring to curb to a degree the over enthusiasm of radical supporters, who are prone to claim too much for this type of engine on account of the success of such vessels as the Selandia. The short experience so far obtained with large oil engines on board ships (while eminently satisfactory and encouraging to the builders and owners), makes speculation difficult as yet; and the writer considers that further practical experience for a term of years must be had before accurate figures will be available as to reliability and upkeep.

Wireless Telegraphy on Canadian Inland Waters.

Canadian Railway and Marine World for June, contained details of the bill providing for the compulsory use of radiotelegraphy on Canadian vessels plying on inland waters, then passing through Parliament, in which some changes were subsequently made. Section 4 of the act is as follows:—

"From and after Jan. 1, 1914, no passenger steamer, whether registered in Canada or not, (a) licensed to carry 50 or more persons, including passengers and crew, and going on any voyage which is or which includes a voyage of more than 200 nautical miles from one port or place to another port or place; or, (b) licensed to carry 250 or more persons, including passengers and crew, and going on any voyage which is or which includes a voyage of more than 90 nautical miles from one port or place to another port or place; or, (c) licensed to carry 500 or more persons, including passengers and crew, and going on any voyage which is or which includes a voyage of more than 20 nautical miles from one port or place to another port or place shall leave or attempt to leave any Canadian port unless such steamer is equipped with an efficient radiotelegraph apparatus, in good working order, capable of transmitting and receiving messages over a distance of at least 100 nautical miles by night and by day, and in charge of a person fully qualified to take charge of and operate such apparatus.

"2. The owner, master or other person in charge of any passenger steamer which leaves or attempts to leave any Canadian port contrary to the provisions of this section shall, on summary conviction, be liable to a fine not exceeding $1,000 and costs, and such fine and costs shall constitute a lien upon such passenger steamer.

"3. This section shall not apply to passenger steamers plying on the rivers of Canada, including the River St. Lawrence as far seaward as a line drawn from Father Point to Point Orient, or on the Northumberland Straits, or on the Georgian Bay, or on the lakes of Canada other than Lakes Ontario, Erie, Huron and Superior, and the provisions of paragraph (c) of subsec. 1 of this section shall not apply to steamers making voyages on Lakes Ontario, Erie, Huron and Superior, the regular route for which is not at any point more than seven miles from the shore.

"4. This section shall not apply to steamers calling at Canadian ports solely for the purpose of obtaining bunker coal or provisions for the use of such steamer, or through stress of weather, or for repairs."

The Richelieu and Ontario Navigation Co. has, through H. H. Gildersleeve, Manager, Western Lines, made representations, urging the exemption of the company's Niagara Line vessels, running between Toronto and Lewiston, N.Y., but, up to the present, without success. The vessels which it operates between Toronto and Hamilton, will, however, be exempt from the provisions of the act, as they are said to be never more than 7 miles from the shore.

Canadian Notices to Mariners.

The Department of Marine has issued the following:—

279. Aug. 13. Newfoundland, west coast, St. John Bay, Old Port au Choix, Querre Island, light established.

289. Aug. 14. Ontario, Bay of Quinte, Northport shoal, change in position of gas buoy.

281. Aug. 19. Ontario, River St. Lawrence, Brockville Narrows, east end, Skelton Island, light established, gas buoy withdrawn.

282. Aug. 19. United States of America, St. Clair River, Recors Point light established.

283. Aug. 21. Quebec, River St. Lawrence, Lake St. Francis, upper entrance to the Soulanges Canal, protection works under construction, gas buoy to be placed temporarily.

284. Aug. 21. Ontario, Lake Superior, Victoria Island, light improved.

285. Aug. 25. Nova Scotia, Bay of Fundy, Minas Basin, westward of Cheverie, buoy established.

286. Aug. 25. Prince Edward Island, east coast, extension to Souris east breakwater under construction, light not shown from lighthouse, temporary light.

287. Aug. 25. Prince Edward Island, north coast, St. Peter harbor, change in position of back range lighthouse.

288. Aug. 25. Newfoundland, southwest coast, Cape Ray, erratum in List of Lights.

289. Aug. 27. British Columbia, Sutil Channel, uncharted rock reported off Heriot Island.

290. Aug. 27. British Columbia, Seaforth Channel, uncharted rock northwest of Dall Patch.

291. Aug. 27. British Columbia, Observatory Inlet, Aiskew Island, gas lighted beacon established.

292. Aug. 29. British Columbia, Vancouver Island, southeast coast, Victoria harbor, intended change in position of Shoal Point beacon light.

293. Aug. 29. British Columbia, Dixon entrance, Queen Charlotte Islands, Langara Island, Langara Point, light and fog alarm established.

294. Sept. 2. Quebec, Gulf of St. Lawrence, Gaspe coast, Cape d'Espoir, fog alarm established.

295. Sept. 6. British Columbia, Strait of Georgia, sandheads off Fraser River, submarine bell to be established at lightship.

296. Sept. 6. British Columbia, Cordero Channel, name.

297. Sept. 6. British Columbia, Prince Rupert harbor, Parizeau Point, quarantine wharf.

298. Sept. 10. Ontario, Bay of Quinte, Foresters Island, gas buoy to be established.

299. Sept. 12. Nova Scotia, west coast, Yarmouth harbor, dredging.

300. Sept. 12. Nova Scotia, south coast, St. Mary River, Black Head buoy established.

301. Sept. 12. Prince Edward Island, south coast, Hillsborough Bay, Pownell Bay, buoys established, change in character of buoys.

302. Sept. 12. Prince Edward Island, north coast, Palmer Road, buoy established.

303. Sept. 12. New Brunswick, east coast, Northumberland Strait, Richibucto harbor entrance, buoy established.

304. Sept. 12. Newfoundland, east coast, Bonavista Bay, Newman Sound, Happy Adventure, light established.

305. Sept. 12. Newfoundland, Notre Dame Bay, Bay of Exploits, Mill Point, light established.

306. Sept. 16. Quebec, Richelieu River, below St. Ours Lock, St. Roch range lights established.

307. Sept. 16. Quebec, Richelieu River, Beloeil station, light established on the upper pier above the railway swing bridge.

308. Sept. 16. Quebec, Richelieu River, change in position of Pointe a la Meule range lights.

Proposed Control of Ocean Freight Rates.

In connection with the recent mission undertaken by H. L. Drayton, Chief Railway Commissioner, on his visit to England, on the subject of a possible control of ocean freight rates between Europe and Canada, it is stated that a number of conferences took place with both Government and steamship officials, but no public statement has been made as to the views held on either side.

A steamship official is reported to have said that the discussion at Liverpool, with Mr. Drayton, had for its chief point, the establishment of arbitrary rates across the Atlantic, an object which, when fully explored, would be found to be practically unattainable. The steamship representatives showed that the high rate was due to the difficulty of securing sufficient cargo on the British side, and that it does not pay to send half loaded vessels westward to bring back Canadian grain.

It will be noted that a similar argument is used by W. G. Ross, Chairman, Montreal Harbor Commission, in his report on the grain transportation problem, which is given on another page in this issue.

Sault Ste. Marie Canals Traffic.

The following commerce passed through the Sault Ste. Marie Canals during August 1913.

Articles			Canadian Canal	U. S. Canal	Total
Copper	Eastbound	Short tons	[illegible]	18,254	[illegible]
Grain	"	Bushels	[illegible]	[illegible]	9,211,9[illegible]
Building stone	"	Short tons			
Flour	"	Barrels	[illegible]	1,168,601	[illegible]
Iron ore		Short tons	[illegible]	2,325,370	[illegible]
Pig iron				2,314	[illegible]
Lumber		M. ft. b.m.	[illegible]	102,064	[illegible]
Silver ore		Short tons			
Wheat		Bushels	[illegible]	[illegible]	[illegible]
General merchandise		Short tons	[illegible]	[illegible]	[illegible]
Passengers		Number	[illegible]	[illegible]	[illegible]
Coal, hard	Westbound	Short tons	[illegible]	[illegible]	[illegible]
Coal, soft	"	"	521,538	[illegible]	2,566,320
Flour	"	Barrels	400		400
Grain	"	Bushels			
Manufactured iron	"	Short tons	[illegible]	[illegible]	37,193
Iron ore			[illegible]		[illegible]
Salt		Barrels	15,120	[illegible]	113,136
General merchandise		Short tons	[illegible]	120,628	[illegible]
Passengers		Number	[illegible]	6,978	[illegible]
Summary.					
Vessel passages		Number	1,119	[illegible]	3,440
Registered tonnage		Net	[illegible]	4,516,816	[illegible]
Freight — Eastbound		Short tons	[illegible]	2,847,593	8,263,27[illegible]
" — Westbound			706,586	[illegible]	[illegible]
Total freight			6,122,266	[illegible]	11,489,44[illegible]

Shortening Time Between Halifax and Montreal.

The C.P.R. s.s. St. George, recently acquired from the Great Western Ry. of England, for the Bay of Fundy service, has been placed in regular service between St. John, N.B., and Digby, N.S., connecting with the C.P.R. express trains from and to Montreal at St. John, and with the Dominion Atlantic Ry. express trains from and to Halifax, at Digby. This makes the fastest regular schedule between Halifax and Montreal, the time occupied on this route, allowing for the difference between Atlantic and Eastern time, being 23 hrs. 30 mins. westbound, and 23 hrs. 35 mins. eastbound. The time occupied by the C.P.R. all rail route to St. John, thence over the Intercolonial to Halifax is 25 hrs. 30 mins. westbound, and 25 hrs. 35 mins. eastbound, and the Intercolonial Ry.'s time is 25 hrs. westbound, and 25 hrs. 30 mins. eastbound.

Jetty for the Fraser River at New Westminster.

The jetty which the Dominion Government is about to build on the north arm of the Fraser River, New Westminster, B.C., will extend from the dyke at the west end of McMillan Island for 22,300 ft. The channel will be 300 ft. wide and 10 ft. deep at low water, and will extend from mile 15, about opposite the inner end of the jetty through the sandheads to the Gulf of Georgia. The material dredged out of the channel will be deposited over the jetty to form a branch to the south. The jetty will consist of a timber bulkhead starting on the dyke at McMillan Island and extending to station 210. It will have a row of piles driven at least 10 ft. into the ground 8 ft. apart, capped by an 8x8 in. timber, at a height of 11 ft. above low water and faced on the south side by 3 by 12 in. short piling. Brush mattresses, about 2 ft. thick, will be laid on each side of the bulkhead, to a width of three times the height of the bulkhead from the ground to the top of cap. The timber is to be wired with no. 6 galvanized telegraph wire. From station 210 to 223, a distance of 1,300 ft., the jetty is to be built in tiers of mattresses the top layer of which will not be less than 4 ft. thick and 20 ft. wide. The top and slopes are to be covered with loose rock equal to a weight of 100 lbs. per sq. ft. of mattress covered. The material dredged from the channel is to be deposited over the jetty to form a [illegible] as may be directed by the engineer in charge. The work is to be completed within [illegible] months after the signing of the contract.

Telephone Cable to Vancouver Island.

A [illegible] submarine telephone cable has recently been laid in the Gulf of Georgia between Vancouver Island and the British Columbia mainland. From a paper by E. P. La Belle and L. P. Crim, read before the American Institute of Electrical Engineers recently, it appears that this cable is to provide better facilities for Vancouver Island with a telephone service from any point on the island to Vancouver and the other principal towns on the mainland.

In the cable are four conductors, each consisting of 12 small copper wires weighing together 300 lbs. per nautical mile. [illegible] with iron wire closely [illegible] wound 70 turns per inch. The "loaded" conductor is covered with three coats of gutta-percha (300 lbs. per nautical mile). The four conductors are twisted around a centre jute with yarn worming between them. The whole is covered with brass tape, yarn and an armor of 15 galvanized steel wires (0.192 in. diam.). This is served with yarn, tarred and covered by two layers of yarn and preservative. The completed cable has a diameter of about 2 ins. and weighs 17,900 lbs. per nautical mile. The electrical circuit constants (for two conductors per nautical mile in place) are resistance 8 ohms, mutual capacity 0.175 microfarad, insulation resistance 460 megohms. The four wires are worked with a "phantom" circuit so that three simultaneous conversations are carried on. The phantom circuit, however, is much inferior to the two physical circuits through having an electrical capacity twice as great. Speech tests on the cable in place showed an equivalent of 8 miles of standard land cable (no. 12 paper insulated, lead covered) connected by a zero loop at each end, and of 5.75 miles with 12 miles of standard cable at each end to prevent reflection impulses.

This is the only cable of the kind in America. On account of the depth to which it had to be submerged (1,300 ft.), gutta-percha insulation was used, and on account of the excessive electrical capacity it was necessary for good speech transmission to balance this with added inductance or "loading." The continuous loading with iron wire was adopted in place of the insertion of regular Pupin coils at intervals on account of the depth of submersion and the ease of repair. The cable was laid in one day (June 16) between 4 a.m. and 7.30 p.m. The total cost is said to have been about $120,000.

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Canadian Railway and Marine World.

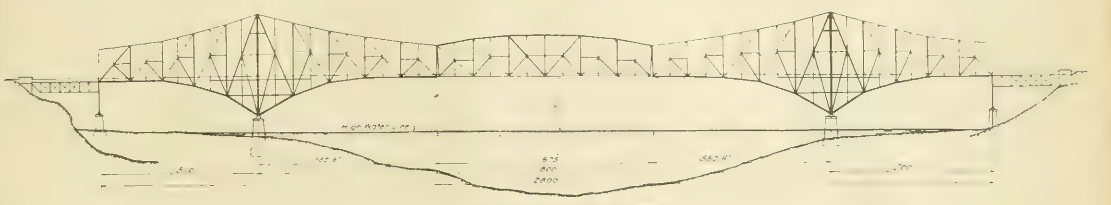
November, 1913

Design of Large Bridges, with Special Reference to the Quebec Bridge.

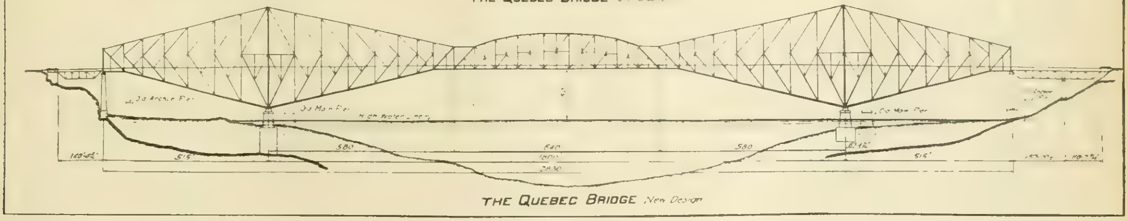
By Ralph Modjeski, C.E., Member Board of Engineers, Quebec Bridge.

Where no limitation is placed by the Government as to length of all spans, the spans should be made of economical length, provided the piers do not reduce the cross section of the river sufficiently to cause an undesirable increase in the current velocity. This economical length may be determined by trials, and will be attained approximately when the cost of the superstructure and of the substructure are nearly equal.

In the case of the Quebec bridge, while the navigation interests fixed the clear height of the structure above high water at 150 ft., the length of span is entirely due to the physical conditions of the crossing. The stream at this point is narrow and deep, the depth in the centre of the stream being about 190 ft. The current velocity at ebb tide is very high—about 9 miles an hour. Very heavy ice runs at times and tends to gorge. The bed rock, as shown by the borings, while accessible near the shore lines, dips rapidly toward the centre of the stream. All these conditions made it imperative to build a span of great length. The information as to bed rock which we now have would indicate that the original project could have been designed with a somewhat shorter span. Yet we should remember that this original project was undertaken by a private corporation, and we should perhaps recognize the value to it of such advertisement as the building of the longest span in the world would obviously afford. The next longest span is that of the Firth of Forth bridge, and is 1,700 ft. long. It is doubtful if a shorter span than 1,700 ft. would have been practicable at the location adopted for the Quebec bridge. I consider it perfectly legitimate to build a more expensive structure than economy of the work itself would call for, if the more expensive structure will afford sufficient advertisement and publicity to compensate for the additional expenditure. Cases also often arise where a purely economical and utilitarian structure would be entirely out of harmony with the surroundings.



THE QUEBEC BRIDGE Old Design



THE QUEBEC BRIDGE New Design

A project to build a large bridge at Quebec, presumably in the same location as the present one, was seriously considered in 1884 and 1885. James Brownlee, A. Luders Light, and T. Claxton Fidler designed a structure with a clear span of 1,442 ft. The description of that project mentions rock foundations. The more complete information we now have, and which was obtained by a costly series of borings, shows that at the present location rock could not have been attained in both piers with any known method of foundation if the piers had been spaced only 1,442 ft. apart, even if the great depth of water could have been overcome.

After the disaster of Aug. 29, 1907, the Dominion Government took up the reconstruction of this bridge. A board of three engineers, including myself, was appointed to design and construct the bridge. After some study of the situation, the board decided that the new bridge should be made wider between trusses and designed to carry heavier loads than those originally contemplated; that, further, none of the old steel work could be used to advantage. It also decided to keep the same location. The final outcome is a double track span 1,800 ft., with a width of 88 ft. between centres of trusses, designed to carry on each track a live load consisting of two E 60 engines placed in any position in a train weighing 5,000 lbs. per foot so as to produce greatest strains. The old piers were not large enough for the new design and could not, therefore, be used. At first the board contemplated building an entirely new pier 57 ft. south of the present north pier, and enlarging the foundation of the south pier by sinking additional caissons adjacent to the old caisson. The necessary span length would then have been 1,758 ft., and it was on that length of span that tenders were asked. It developed later, from the experience of sinking the north caisson, that the method proposed for enlarging the south foundation would not be safe, even if it were practicable, and so an entirely new foundation and pier were decided on for the south shore. The new north pier could not be placed further out in the river because of the sloping bed rock and great depth of water. The south pier could not be placed on the north, or river, side of the old south pier because of the old wreckage, so it was placed 64 ft. 8 in. south of the old pier, or as close as possible to it. Both new piers being placed 64 ft. 8 in. south of the old piers, measured between centres, the new span remains 1,800 ft. long.

Substructure.

The piers are all of granite, backed with concrete. There is an increasing tendency now to build everything of concrete. Certainly, concrete is a most convenient material and quite economical. When it comes, however, to providing supports for a very important and expensive structure, cut stone masonry should be used in preference to concrete, except for backing. There are many varieties of excellent building stone on this continent. I have used granite, some varieties of oolitic limestone, also sandstone, which all show excellent lasting qualities in works constructed many years ago, while concrete presents some uncertainties and requires expert care to give good results. Concrete may in ages prove to be as lasting as stone masonry, but as yet we do not know. We know that well constructed stone masonry will last for centuries. A notable example of this is the great Aqueduct of Gard, built by the Romans in the first century B.C.

TYPES OF SUPERSTRUCTURE.—Having fixed the span lengths of a bridge, the next thing to determine is the type of superstructure to be used. The various types usually applied to long spans may be classified as follows: (1) Arches (steel)—(a) three-hinged; (b) two-hinged. (2) Simple spans. (3) Cantilever structures—(a) with suspended span; (b) without suspended span. (4) Suspension bridges. I have purposely omitted masonry and concrete arches as structures not coming clearly within the scope of this paper. Steel arches have a rational application only where nature has provided natural abutments, as at Niagara Falls, for instance, or where natural surroundings lend themselves to ornamental construction.

Crooked River Arch.—I have recently completed an arch bridge for the Oregon Trunk Ry. in the Crooked River Canyon. It is a two hinged spandrel braced arch. Three hinged arches are now seldom used for a railway bridge because they are less rigid than two hinged arches. They still have a good application in roof trusses which are not subject to heavy and rapidly moving loads. In several large arch spans the central connection offered considerable difficulties. The reason is that the top chords at the centre of a purely two hinged arch are calculated to have stresses in them, due to dead load and temperature, when the span is riveted up and ready to receive the rolling load. These stresses had to be introduced by powerful jacks, or other means, before the final point could be riveted up. To avoid this difficulty, I have proceeded as follows in the Crooked River arch. It was assumed that the dead load and temperature stresses at 60 deg. Fahr. in the top chord at centre are zero. This being the case, the arch acts as a three hinged structure under those conditions—namely, with all dead load in place and at 60 deg. Fahr. The span was, therefore, erected as a three hinged arch, all dead load, or the equivalent, including the decking, was placed thereon, and at a time when the temperature was very nearly 60 deg. the centre panel of the top chord was inserted and riveted up. The calculations were simple. The dead load stresses were calculated as in a three hinged arch, the temperature and live load stresses as in a two hinged arch, and the various results combined.

Types of Span.

A two hinged spandrel braced arch is probably the best type to use for railway traffic, where the natural abutments permit of sufficient rise, which will often be the case where the arch type of bridge is a logical solution. This particular type of arch is more rigid and less subject to vibration than the other types of arch, and presents the advantage of easier erection, which can then be simply performed by treating each half as a cantilever arm held back by suitably temporary anchorages until the centre connection is made. An arch bridge is a somewhat special structure and is rarely used for very long spans, except, as I remarked before, where nature has provided abutments.

SIMPLE SPANS.—Twenty-five or 30 years ago the system of truss most favored for long simple spans was a double intersection Pratt truss with parallel chords. Nowadays the type most used is a single intersection Pratt truss with subdivided panels and curved top chord. The curved top chord is an element of economy. The single system has also a great advantage of more definite stresses. It has its disadvantages, such as for instance, the lack of uniformity in deflection, about which I will speak more in detail in connection with cantilever system. There is no doubt that a bridge composed of simple truss spans is a better bridge than a cantilever system or a suspension bridge, chiefly because of its rigidity. This rigidity results from the fact that a load placed on one span has no lifting action on the adjacent spans as in a cantilever system, or on other portions of the same span, as in a suspension bridge. But long simple spans must be erected on falsework or floated into position. The first method is often admissible on account of the necessity of keeping the channel open for navigation or excessive depth of water combined with navigation requirements, or other local conditions. The floating of a span into position is not only costly but hazardous. It has been successfully performed, but is not always feasible or safe. Then, too, generally speaking, a cantilever bridge is more economical for long spans. These considerations often lead to the adoption of a cantilever design in preference to simple spans. A cantilever span can always be erected without false work, although the adjacent or anchor spans must generally be erected on falsework. Sometimes simple spans are erected without falsework.

The length of simple spans has been growing from year to year. The Cincinnati Southern bridge at Cincinnati, built in 1877, contains a simple span of 515 ft. In 1891 G. S. Morison built the Cairo bridge, connecting a span 518 ft. in length, single track. The Municipal bridge in St. Louis has three simple spans of 668 ft. in length, 110 ft. high at the centre, double track and road ways. The metropolis bridge over the Ohio River, if the present design is carried out, will have a simple span 720 ft. long, double track. This increase is due largely to the use of high grade materials, such as nickel or chrome nickel steel, and to the improvement in shop and field methods.

And here we may say a few words about wind forces. In small spans the action of wind rarely affects the main members of the span, and the wind bracing used is calculated more to make the structure rigid against lateral motion under rapidly moving loads than to take care of actual wind stresses. As the length of span increases, this element of wind becomes more and more important, until in very long spans it may become as important as the moving load. In a simple span the heaviest members, as well as the greatest height of truss, occur near the centre of the span. In other words, the resistance to wind per lineal foot of truss in a simple span is greatest at the centre of the span, and, owing to the overturning moment due to wind, grows in importance with the height. In a cantilever span the greatest height of truss and the heaviest members are near the piers, hence the greatest resistance to wind per lineal foot of truss is near the piers. This remark is sufficient to explain why wind stresses are easier to provide for in a cantilever structure than they are in a simple span of the same length.

Proportions of Simple Spans with Curved Top Chords.

	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	
Thebes suspended span...........	15.03	....
Average............	[illegible]	

LONGEST SIMPLE SPAN.—No hard and fast rule can be laid down as to the length at which a simple span becomes uneconomical as compared with a cantilever span. Generally speaking, considering the present knowledge of material, a simple span of 700 ft. may be taken as the practical economical limit, beyond which it is not advisable to go without a thorough investigation and comparison with a cantilever system. Where conditions require unusual methods of erection this limit may be much lower. For instance, in the Thebes bridge it was necessary to erect the 671 ft. channel span without falsework. A simple span would have required the addition of a considerable amount of metal, both in the span itself and in the adjacent spans, to permit of its being erected as a cantilever; this excess of metal would have been useless after the completion of the bridge, and its cost would have made the bridge more expensive than the adopted cantilever design.

DIMENSIONS OF SIMPLE SPANS.—In designing long simple spans the following general principles should be observed. The width, centre to centre of trusses should not be less than one-twentieth of the span, preferably one eighteenth. In double track spans the width required for clearance generally governs, except in very long spans. The height at centre of span, for a Pratt system of truss with subdivided panels, should be from one seventh to one fifth of the length. The table on this page shows the proportions of the width and height to the length of span in some of the curved top chords bridges built recently. The height at the ends should be only sufficient for an effective portal. A rigid mathematical research by Jos. Mayer, Principal Assistant Engineer of the Quebec bridge, leads to a theoretical proportion between the height at centre and length of span equal to 0.18, or somewhere between one fifth and one sixth, for heaviest loads and double track spans.

PANEL LENGTH.—The best panel length is not so easy to determine. Since the economical inclination of diagonals is very nearly 45 deg., it would result that in a Pratt truss with subdivided panels their length should approach one half of the height of truss. This would mean that in a truss with a curved top chord the panels in the centre should be longer than those near the end. This has been done at least in one instance, namely, in the Municipal bridge in St. Louis. The advantages of such an arrangement are a slight economy in the weight of steel and an improved appearance, since the diagonals have nearly the same inclination throughout. The equal panels, however, present, in my opinion, two decided advantages, which may more than offset the advantages of the former system, namely, that, all panels being equal, there is a greater duplication of parts, the floorbeams are all alike, except at ends, the stringers are all alike, the length of bottom chord eyebars is the same throughout; and, further, that the falsework may be built in uniform panels, and the traveller, which is usually designed with a view to have the uprights in proper relation to the panel points, so that the connections may easily be made, preserve its relation to the various panels points as it is moved from panel to panel. For these reasons uniform panels should be preferred in the majority of cases of simple spans.

Maximum Span Lengths.

I have already stated that the greatest practical length of a simple span is about 700 ft. With the use of certain known alloys of steel of greater strength than medium carbon steel this limit may become as much as 750 ft. Beyond this limit the weight of simple spans becomes so great, in comparison with cantilever spans, that the latter must be considered. A mistaken idea sometimes prevails that the weight of steel in a span increases in proportion to the square of the length. This is, in a measure, true for short spans, say 100 to 300 ft. This ratio of increase, however, is not a constant, but increases with the span. A simple span above 1,200 ft. in length increases in weight approximately as the cube of the length, and this exponent increases more and more rapidly until at about 2,000 ft. the weight of carbon steel required to carry the weight of such a span and of a moderate live load becomes infinite. For a span built of nickel steel the weight becomes infinite when the length reaches 2,700 ft. Simple spans much below those liimts, even if possible, would still be very uneconomical until we get down to spans 700 ft. or under.

CANTILEVER SPANS.—This leads us to cantilever spans. I mentioned two types of such spans—one without a suspended span and the other with a suspended span. A remarkable example of a cantilever bridge without a suspended span, which may be called a semi continuous structure, is the Blackwell's Island, or Queensboro bridge, in New York. There seems to be no advantage in omitting the suspended span; on the contrary, the structure differs from a true continuous bridge over several supports only by the introduction of a hinge at the centre of the main span which transmits shears but not moments. The vibrations and deflections of each segment are, therefore, transmitted through those hinges to all the other segments. Furthermore, since the stresses in such a structure depend on deflections, there is more or less uncertainty in the calculations. I do not wish to be understood as objecting to any type of structure seriously, because of the uncertainty of calculations. In any logical construction the calculations can always be made with sufficient accuracy for the safety of the work. It is only when everything else is equal that determinate stresses should be preferred.

Let us consider the usual type of cantilever bridges, the one in which two cantilever arms support a suspended span. We may assume that in bridges requiring the construction of a cantilever span the length of the main span is usually determined by local conditions. The general dimensions to be fixed by the designer are, therefore, the length of the suspended span, the length of the anchorage spans, when these are not determined by local conditions, the height of the trusses at various points and the relative distances and positions of trusses to one another. Let us discuss these various dimensions in connection with the new Quebec design. The Quebec bridge, with its longest span in the world, has justly attracted much attention among engineers and has naturally elicited comment and criticism. It is acknowledged that a discussion of a scientific subject by professional men is often of greater value than an elaborate paper on this same subject by one individual. If I refer to some of the criticisms, let it be considered as a friendly discussion which may be of value to the profession.

New Quebec Bridge.

The new Quebec bridge has been finally designed with two anchor arms 515 ft. long, a suspended span 640 ft. long, and two cantilever arms 580 ft. long. The moving loads finally adopted for the Quebec bridge are: On each track two Cooper's class E 60 engines, followed or preceded, or followed and preceded, by a train load of 5,000 lbs. per foot per track. In addition to the actual dead load of the structure, a load of 500 lbs. per lineal foot on suspended span and 800 lbs. on balance of bridge was allowed for snow.

THE WIND LOADS were taken as follows: A wind load normal to the bridge of 30 lbs. per sq. ft. of the exposed surface of two trusses and one and a half times the elevation of the floor (fixed load), and also 30 lbs. per square foot on travellers and falsework, etc., during erection.

A wind load on the exposed surface of the train of 300 lbs. per lineal foot applied 9 ft. above base of rail (moving load).

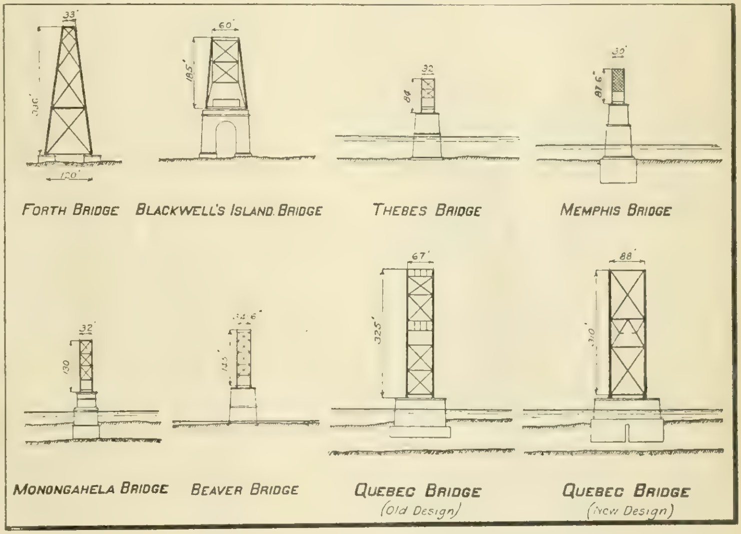
A wind load parallel with the bridge of 30 lbs. per sq. ft. acting on one half the area assumed for normal wind pressure.

In the Forth bridge the enormous wind load of 56 lbs. per sq. ft. was assumed. This load was imposed on the designers by the Board of Trade soon after the Tay bridge disaster. The Tay bridge was not designed to withstand even a 30 lbs. pressure. This assumption of a 56 lbs. wind in the Forth bridge results in a very large addition of metal in the bottom chords through which the wind stresses are transmitted to the piers. The material in those members is distributed as follows:

	Gross tons
Dead load	[illegible]
Live load	[illegible]
Wind load	[illegible]
Total	[illegible]

The metal here provided for the wind is nearly three times that provided for the live load, and is about 47% of the total required. In the new Quebec bridge design the wind pressure is equivalent to about 35% of the uniform live load near the piers and to about 20% of the live load near the ends of the cantilever arms.

A pressure of 30 lbs., according to German experiments with electric cars, would correspond to a wind of a velocity of over 100 miles an hour. Other experiments made at various times on small surfaces show that a velocity of 85 miles would correspond to a pressure of about 30 lbs.



Comparative Height Over Piers of Various Bridges.

The following formula for wind pressures is generally used: P=kv2, in which P= pressure per square foot, v=velocity in miles per hour, and k=a coefficient.

Eiffel's 200 or more experiments show this coefficient to vary from 0.0026 to 0.0032, and the average is 0.0030, which he recommends. Trautwine makes k=0.0050, which seems too high. But, even using the latter, a pressure of 32 lbs. would correspond to a "hurricane" of a velocity of 80 miles. The German experiments agree with Eiffel's. Making k=0.0030, a pressure of 30 lbs. would correspond to a velocity of 100 miles an hour, which, according to Trautwine, is a violent hurricane uprooting "large trees."

With a wind of this velocity there would be no traffic on the bridge—empty freight cars or even light passenger cars would be overturned. Velocities of more than 85 miles may occur in cyclones and tornadoes over restricted areas. Such storms are very rare in Canada; but even should such an extraordinary disturbance happen, causing a wind pressure of as much as 60 lbs. to be applied to the entire Quebec bridge as now designed—the stresses in the truss members would be less than with the maximum live load and a 30 lbs. wind—and although the stresses in the laterals would be increased above the specification limits, they would still remain within the elastic limit of the members.

LENGTH OF SUSPENDED SPAN.—The length of the suspended span does not depend merely upon the most economical distribution of material required for carrying the live loads and the dead load of the bridge after it is completed. Where there are no other considerations beyond the actual working stresses in the finished structure, the most economical length of the suspended span for a total span of 1,800 ft. would be in the neighborhood of 1,000 ft. But to erect a simple span of such unprecedented length, either by floating or by cantilever method, would be impracticable. Furthermore, the cantilever method of erecting a suspended span of even a moderate length always requires additional material, both in the cantilever arms and in the suspended span, to take care of the erection stresses.

The longer the suspended span in relation to the total main span, the greater will be the required addition—so that whether it be contemplated to erect the suspended span by cantilever method or by floating into position, the length of the suspended span finds itself limited not by mere economic considerations of the finished bridge, but by either the excess of material required during erection by cantilever method, and difficulties arising therefrom, or by the difficulties attending the floating of a very long and heavy span into position. These difficulties increase very rapidly with the length of the span to be floated. In the new design the suspended span is the longest which the board considered safe to float, and it fits the entire design very well.

Erection by Floating.

The erection of this span by floating made it possible to design it with the view to greatest economy. Its various members will not be subjected to any greater stresses during erection than they would be in a simple span of the same length resting on two piers. It was, therefore, possible to design this suspended span of as little weight as a well designed simple span would be. It is more important to save weight in a suspended span than in an independent simple span, because each pound in the former requires several pounds in the entire structure to carry it. The importance of economy in the suspended span of the Quebec bridge will be appreciated when it is considered that 1 lb. uniformly distributed over the trusses of the suspended span needs 3 lbs. of metal added to the bridge to carry it, making an addition of 4 lbs. in all. This accounts for curved top chords in the span in question, as well as for the use of nickel steel for the trusses thereof.

LENGTH OF ANCHOR ARMS.—It has been pointed out that the length of the anchor arms is uneconomical—that a shorter arm would have been cheaper. It must not be forgotten that a shorter anchor arm increases the pier reactions, as well as the steel in the anchorage proper. The present anchor piers are founded on rock ledges, which dip rapidly toward the river. To move them nearer to the river would have involved much more expensive foundations.

While an addition of dead load in the main span will require several times the weight of metal to carry it, an addition of dead load in the anchor arm requires no increase of metal to carry it when there is an upward or negative reaction on the anchor pier. This is explained by the fact that any load placed between the main piers or on the main spans increases all moments and shears over all the spans, while any load placed on the anchor arm, if the reaction on the anchor pier is negative, decreases that reaction and consequently the moments in the anchor arm, but has no effect whatever on the main span. For this reason carbon steel will be used mostly in the anchor arm on the new design. The carbon steel unit stresses adopted for the Quebec bridge are generally five sevenths of the nickel steel stresses, the former requiring heavier members. The additional metal in the anchor arm is a source of economy when the relative prices of carbon and nickel steel are considered.

HEIGHT OVER PIERS.—An opinion has been expressed that the height over the piers of the new Quebec bridge is not great enough for economy. Actual calculations show that for economy the height of 310 ft. in the Quebec design is too great by about 20 ft. for the K system of trussing adopted; further, that this height would have been at least 40 ft. too great for the original system of the official design. The height of the Forth bridge towers, while 26 ft. higher than the Quebec bridge, though the span is 100 ft. shorter, is no doubt economical for the form of trussing adopted for it. The economical height is not only a function of the length of the span but also of the panel length next to the pier. This height should be such as to correspond to an inclination of the diagonals not far from 45 deg. A double intersection system with very long panels near the pier, such as adopted in the Forth bridge, would have been economical for the Quebec bridge, except that it re [illegible] important. The 20 ft. excess in height of [illegible] of the bottom chords, which are of consid- [illegible]

STRAIGHT VERSUS CURVED CHORDS.—In long cantilever spans the bottom chords of the cantilever and anchor arms should be straight when possible. With a curved chord the joints must be made at the panel points. These joints are of great importance, as has been shown in the report of the Royal Commission on the Quebec bridge disaster. They should be fully spliced to take care of secondary stresses due to deflections of the span during erection and under the action of live load. It is advisable, therefore, to place them outside of the point of connection with the diagonals and keep them clear of gusset plates. The same objection does not exist in top chords of simple spans, which are of moderate sizes, even in the longest spans known. The economy in simple spans resulting from such curved chords is worth while and quite important, while if any economy were to result from curving the bottom chord of the cantilever and anchor spans, such economy would certainly be of little importance in comparison with the resulting disadvantages. The vertical deflections from live loads are not as great in a straight chord design as in a curved chord design.

Another consideration in favor of the straight chords is that the most important, in fact the bulk, of the wind forces travel to the pier through the bottom chords of the cantilever and anchor arms and the wind bracing, or lateral system situated in their plane. The straight bottom chords carry these stresses direct to the piers without transmitting any appreciable components to the web system of the trusses. Not so with curved bottom chords. At each point where the chord's direction is changed a component stress is transmitted to the web. This means that while a pair of straight chords with its lateral system deflects under the action of the wind in the plane of the chords only, a pair of curved chords, by transmitting shear to the web members, causes the trusses to deflect, the windward truss downward, tending to flatten the curve, and the leeward truss upward, tending to make the curve more pronounced. The rigidity of the straight chord design against lateral deflection and oscillations is therefore greater than that of the curved chord design.

One of the reasons why curved bottom chords were used in the cantilever arms of the original Quebec bridge design was the fact that it was the aim of that design to provide full headroom of 150 ft. on a width of 1,000 ft. The bottom chords of the anchor arms were then made curved also for the sake of symmetry. The width on which the full headroom will be obtained has been reduced in the new design to about 760 ft., which certainly is more than ample to accommodate navigation. Only the highest vessels will be limited to this width of 760 ft., and that only at high water.

The top chord of the Quebec bridge cantilever and anchor arms is straight. The Forth bridge cantilever arms have straight top chords also. While there was good reason for making the Forth bridge top chord straight, there was no serious reason, beyond a slight increase in vertical rigidity, for making it straight at Quebec. The two trusses on the Forth bridge are in planes inclined toward each other at the top. The two top chords are parallel. Had they been made curved they could not have been parallel, since they must necessarily be situated in the inclined planes of the trusses. The appearance of tension chords having a greater distance apart at the centre of the arm than at either end would have been very bad. But there is no such reason at Quebec. The trusses are in vertical planes and the top chords could have been curved without serious inconvenience, but also without any advantage. The board considered that, aside from the additional vertical stiffness, a straight chord will present an appearance of strength which a curved chord would not do.

The foregoing is the first part of a paper read by Mr. Modjeski before the Franklin Institute in Philadelphia. It will be continued in the next issue.

Birthdays of Transportation Men in November.

Many happy returns of the day to —

F. W. Alexander, A.M. Can. Soc. C.E., Division Engineer, Alberta Division, C.P.R., Calgary, born at Fredericton Jct., N.B., Nov. 22, 1878.

J. O. Apps, General Baggage Agent, C.P.R., Montreal, born at Tara, Ont., Nov. 9, 1877.

A. B. Atwater, Assistant to President, lines west of Detroit and St. Clair Rivers, G.T.R., Detroit, Mich., born at Sheffield, Ohio, Nov., 1845.

G. B. Burchell, ex-General Manager, Maritime Coal Ry. and Power Co., Montreal, born at Sydney, N.S., Nov. 1, 1877.

J. R. Cameron, Assistant General Manager, Canadian Northern Ry., Winnipeg, born at Truro, N.S., Nov. 5, 1865.

L. D. Chetham, City Passenger Agent, C.P.R., and District Passenger Agent, Esquimalt and Nanaimo Ry., Victoria, born at Matlock, Eng., Nov. 5, 1869.

F. H. Clendenning, District Freight Agent, B.C. Coast Service and Trans-Pacific Steamships, C.P.R., Vancouver, B.C., born at Montreal, Nov. 9, 1881.

F. Conway, City Freight and Passenger Agent, C.P.R., Kingston, Ont., born at Ernestown, Ont., Nov. 19, 1850.

A. S. Cook, Inspecting Engineer, National Transcontinental Ry., Ottawa, born at Penobsquis, N.B., Nov. 20, 1873.

W. L. Crighton, Advertising Agent, Canadian Government Railways, Moncton, N.B., born at Derby, Eng., Nov. 9, 1871.

W. B. Cronk, ex-General Superintendent, National Transcontinental Ry., Montreal, born at Footville, Wis., Nov. 11, 1862.

W. Downie, General Superintendent, Atlantic Division, C.P.R., St. John, N.B. (on leave), born at Rock Currie, Ireland, Nov. 12, 1850.

Jos. Dubrule, jr., Manager, Canadian Pacific Car and Passenger Transfer Co., and President, Prescott and Ogdensburg Ferry Co., Ltd., Prescott, Ont., born at Spencerville, Ont., Nov. 14, 1872.

R. L. Fairbairn, General Passenger Agent, Canadian Northern Ry., Toronto, born at Stillwater, Minn., Nov. 24, 1880.

P. J. Flynn, Terminals Manager, Winnipeg Joint Terminals, C.N.R., G.T. Pacific Ry. and National Transcontinental Ry., born at Fishers, N.Y., Nov. 22, 1872.

Grant Hall, General Manager, Western Lines, C.P.R., Winnipeg, born at Montreal, Nov. 27, 1863.

John L. Hodgson, Master Car Builder, G.T. Pacific Ry., Transcona, Man., born at Simcoe, Ont., Nov. 15, 1858.

W. M. Hood, Travelling Passenger Agent, Canadian Northern Ry., and Canadian Northern Steamships, Ltd., Toronto, born at Harrow, Ont., Nov. 25, 1872.

W. E. Ladley, Superintendent of Motive Power, Reid Newfoundland Co., St. John's, Nfld., born at Leeds, Eng., Nov., 1875.

J. McGillivray, General Manager, Inverness Ry. and Coal Co., Inverness, N.S., born at Nairn, Scotland, Nov. 13, 1867.

J. McMillan, General Superintendent of Telegraphs, Western Lines, C.P.R., Winnipeg, born at Liverpool, Eng., Nov. 2, 1866.

T. E. Martin, Local Freight Agent, C.P.R., Quebec, Que., born at Beauharnois, Que., Nov. 23, 1852.

A. S. Munro, Commercial Agent, G.T.R., London, Ont., born at Hamilton, Ont., Nov. 10, 1880.

C. Murphy, General Superintendent, Manitoba Division, C.P.R., Winnipeg, born at Prescott, Ont., Nov. 20, 1865.

A. C. O'Neil, Travelling Freight Agent, G.T.R., London, Ont., born at Point Edward, Ont., Nov. 30, 1866.

W. J. Quinlan, District Passenger Agent, Grand Trunk Pacific Ry., Winnipeg, born at Montreal, Nov. 21, 1883.

H. P. Sharpe, General Agent, Dominion Express Co., Toronto, born at Brockville, Ont., Nov. 24, 1864.

G. H. Shaw, General Traffic Manager, Canadian Northern Ry., Toronto, born at Smiths Falls, Ont., Nov. 25, 1859.

F. M. Spaidal, General Manager, Canadian Northern Quebec Ry., and Quebec and Lake St. John Ry., Montreal, born at Gananoque, Ont., Nov. 13, 1858.

J. Sparks, Assistant General Baggage Agent, Western Lines, C.P.R., Winnipeg, born in London, Eng., Nov. 25, 1874.

H. P. Timmerman, Industrial Commissioner, Eastern Lines, C.P.R., Montreal, born at Odessa, Ont., Nov. 6, 1856.

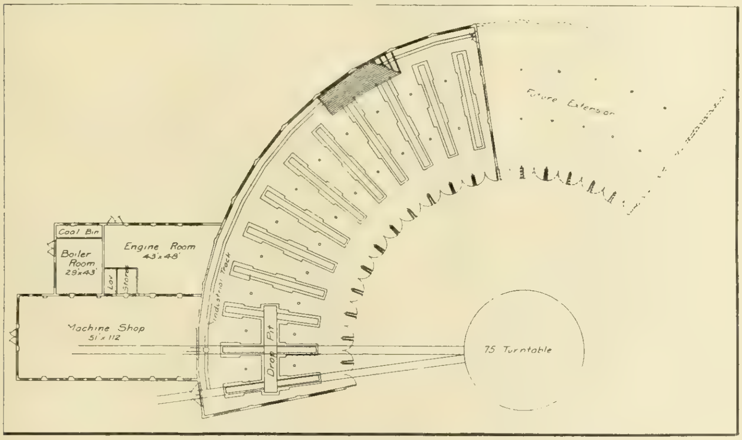
H. E. Whittenberger, General Superintendent, Ontario Lines, G.T.R., Toronto, born at Peru, Ind., Nov. 9, 1869.

C. G. Washbon, Resident Engineer, C.P.R., Winnipeg, born at Morris, N.Y., Nov. 27, 1887.

National Transcontinental Railway Standard Locomotive House.

The latest standard type of locomotive house for the N.T.R. is shown in the accompanying illustrations. In Canadian Railway and Marine World for Sept., 1912, a plan of the standard locomotive house, as then approved, was described, with illustrations, but it was subsequently found that the design then decided upon might be improved in some particulars, resulting in the present design.

In general arrangement, the new design is similar to the former, the principal point of variation being in the shifting of the machine shop and auxiliary buildings from their former location on the outside of the locomotive house, so as to leave the outside track clear for a through connection, the idea being that when a crippled locomotive is brought into the terminal, it may be run on the through track alongside the machine shop by the yard crew, where it may be picked up when convenient by the mechanical department and run in on the pit. In the former arrangement, the dropping off of a crippled locomotive on the turntable side of the locomotive house left the latter blocked, necessitating the immediate removal of the locomotive, which would not always be convenient. The normal handling of the motive power will not be disturbed in the new arrangement.



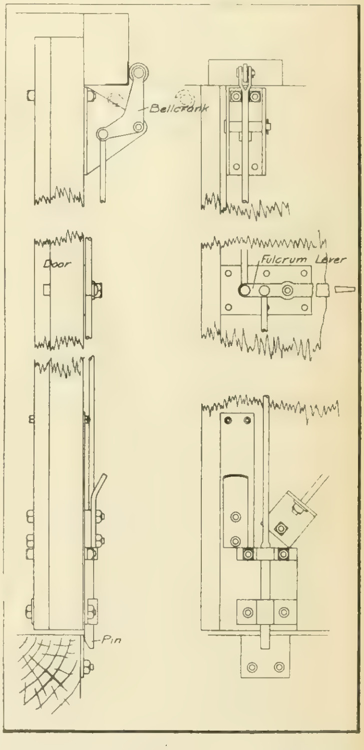
Standard Locomotive House and Shop for National Transcontinental Railway.

The new design is for a 12 stall house, so designed with the auxiliary buildings to one end that future pit extensions may be added without in any way interfering with the original plans, the auxiliary buildings being made of sufficient size to meet the demands of future enlargements to the motive power accommodation. The main building has the stalls, forming chords of a circle, on a central angle of 7 degs. 46 mins., the inside radius of the building to the centre line of the door posts being 114 ft. 5¼ ins., and the outside radius, 205 ft. 5¼ ins., giving a locomotive house depth of 91 ft. In the centre of the circle is a 75½ ft. turntable.

At the lower end of the locomotive house are three drop pits, communicating with each other through a cross pit. The lower one of the three drop pits is on the through track provided in the new arrangement for the reasons explained. The central drop pit track runs through into the machine shop to the rear, a 112 by 56½ ft. building. Adjoining the machine shop are the engine and boiler rooms, 48 and 29 ft. long respectively by 43 ft. wide. All these buildings are to be on concrete foundations up to 4 ft. above the base of the rail, with the remainder of the walls of red brick. The roof of the locomotive house will be supported on wooden columns, girders and beams, with brick walls at the rear and side, and steel columns at the door posts. The roof of the machine shop and engine and boiler rooms will be supported on steel trusses. Over the drop pits and machine shop there will also be skylights.

The pits are to be 60 ft. long, 3¾ ft. wide, and 2ft. 11 ins. deep at the rear, rising to 2¼ ft. at the front from the base of rail to a 3 in. crowning in the bottom of the pit. depression at the rear of the pit will drain off the pit water through a 4 in. cast iron pipe. The pit construction will be concrete throughout, the top of the pit walls being surmounted by two, and in places three, 8 by 12 in. timbers, spiked on rods bedded in the concrete walls, the 80 lb. rails resting on the timbers. The locomotive house will have a 4 in. cinder floor, except around the inner wall, which will be floored with 3 in. planking to the rear end of the pit. Around the inner wall of the house, at 5 ft. centre from the wall, there will be a 2 ft. industrial track, laid with 40 lb. rails, with a turntable between the central drop pit track, leading back into the machine shop.

Around the inner wall, at the end of the pits, there will be a concrete heating duct of varying size, largest at the engine room end, where connection with the heating fans is made. At the end of each pit there will be a 9 in. heating opening, and from the heating duct for each pit there will be a heating pipe running alongside the pit, with three 9 in. openings leading in along one side at equidistant points along the pit length. The drainage of the buildings will be provided for by an 8 in. tile pipe outside the outer wall of the locomotive house, with a 4 in. cast iron connection from each pit, and a 6 in. connection from each end of the cross drop pit, and a 4 in. pipe from the boiler room.



Door Fastening Device for N.T.R. Locomotive House.

The machine shop will have the usual running repair equipment. The engine room will contain air compressors, heating plant and washing plant. The boiler room will contain two boilers, with coal bin to the rear. From the boilers there will be a 4 in. drain, connecting with a drain from the lavatory and thence through a 6 and 10 in. pipe to the main drain before mentioned.

The arrangement of the through track over the lower drop pit, in addition to providing facilities for handling cripples more expeditiously, will also make possible a handier store for heavy material. It is anticipated that it will be possible for the yard crew to shunt in on the through track a car of store material, leaving it on the track adjoining the machine shop until required, when the shop hands can easily pinch bar it into the locomotive house without calling on outside assistance. It is the intention to use the portion of the shop adjoining this through track drop pit for a heavy store.

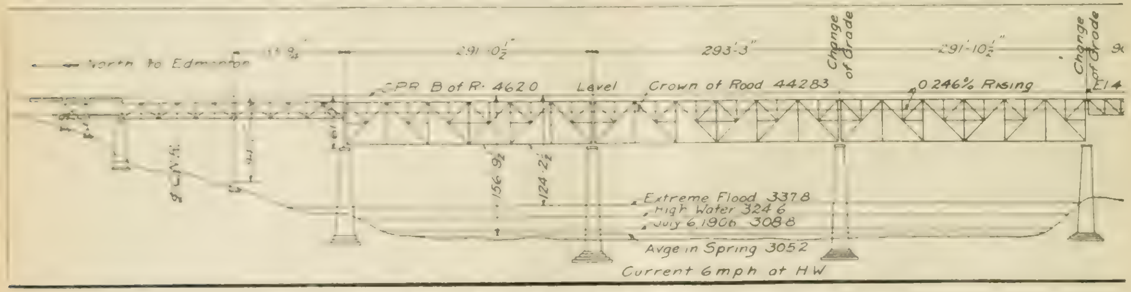
In the design of the building some unique features have been embodied, principal among which is the door fastening device shown herewith. Locomotive house doors have a tendency to warp, and frequently leave large gaps when closed, making the heating of the building difficult, this warping tendency being more pronounced at the top of the door, where it is difficult to apply local pressure. The locking arrangement shown consists of a bell crank pinned to a bracket at the top of the door. The upper end of the bell crank carries a roller that bears on the outside of a steel plate on the door jamb. The lower end of the bell crank connects with a rod, fastened at its lower end to a fulcrum lever, the depressing of which swings the bell crank roller up into engagement, tightly closing the door. The same action depresses a fastening pin at the bottom of the door.

The whole building will be electrically wired, with drop lights in minor positions, and flaming arc lamps in the more important places. The engine room will contain one flaming arc light, the machine shop six, and the locomotive house 12, each being independently controlled. There will also be two flaming arc lights in front of the locomotive house.

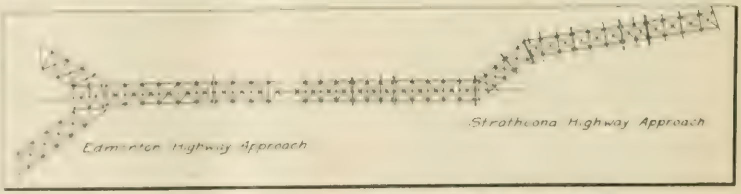
The designs for the whole standard locomotive house, with auxiliary buildings, were prepared under the direction of W. J. Press, M. Can. Soc. C.E., Mechanical Engineer, N.T.R., to whom we are indebted for the information on which this article is based.

Canadian Pacific Railway High Level Bridge at Edmonton.

The valley of the North Saskatchewan River, at the site of this bridge, between Edmonton and Strathcona, is about half a mile wide and 160 ft. deep. Of this width the river occupies from 800 to 900 ft., depending on its stage, the depth varying from about 8 ft. at the deepest point at the time when the ice goes out, to about 40 ft. during flood time. The current is about six miles an hour, and the depth of water is a very uncertain quantity, as the river sometimes rises more than 10 ft. over night after heavy rains. The ground is sticky blue clay, with heavy boulders below the river bed.



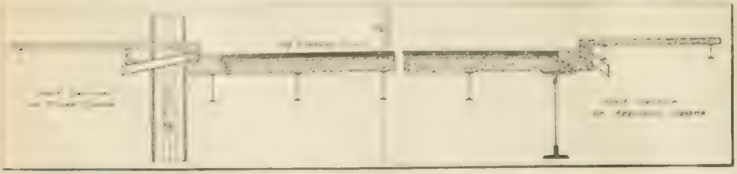
Canadian Pacific Railway Edmonton Bridge—Edmonton End.



Highway Approach and Main Decks on C.P.R. Edmonton Bridge.

The substructure of the bridge is of concrete, and consists of four main or river piers, each about 125 ft. high, and further, of 62 smaller piers which support the viaduct legs which carry the approach spans.

In the superstructure there are three main spans of the Pratt type, with subdivided panels, [illegible] ft. centre to centre of end bearings. Trusses are 50 ft. deep, and are spaced 25 ft. apart centre to centre. The main floor beams are [illegible] ft. long and [illegible]d 4⅛ ft. over the truss [illegible] carried three tracks, a railway [illegible] [illegible]. On the deck of the bridge are the C.P.R. upon the centre line of the bridge, and one electric railway track on each side of the C.P.R. track. The top of roadway is situated 19 ft. 2 ins. below the base of rail, and is of concrete construction, floored with creosote blocks, this combination having a thickness of 14 ins. at the crown. The roadway is carried in the usual manner on steel stringers connected to floor beams, which attach to the verticals at the panel points of the trusses. Two sidewalks, 8ft. in the clear, are carried, one at each side of the bridge at about the level of the roadway, on brackets which fasten to the ends of the roadway floor beams.



Highway [illegible] C.P.R. Edmonton Bridge.

The approach spans consist of seven Pratt truss spans 96 ft. ⅛ in. long, and six similar spans 47 ft. long; the shorter spans are the tower spans, and occur over the towers, which are shown very clearly in the illustration, dated Sept. 30, 1912. There are also in the approach part of the work two Warren trusses, one 131¾ ft. long, and the other 129¾ ft. long. These 15 spans, which form the major part of the approach work, have trusses which are 19 ft. deep and spaced 25 ft. apart centre to centre, and are similar to the large trusses, as regards the arrangement on their decks, while they have their bottom chords immediately under the highway floor and sidewalks.

Near each end of the bridge the roadway and sidewalks curve out from beneath the tracks upon the deck, and from these points of curving to the abutments are supported by a deck plate girder system with rolled I beam stringers and built up floor beams and brackets. The main girders are themselves carried on steel bents.

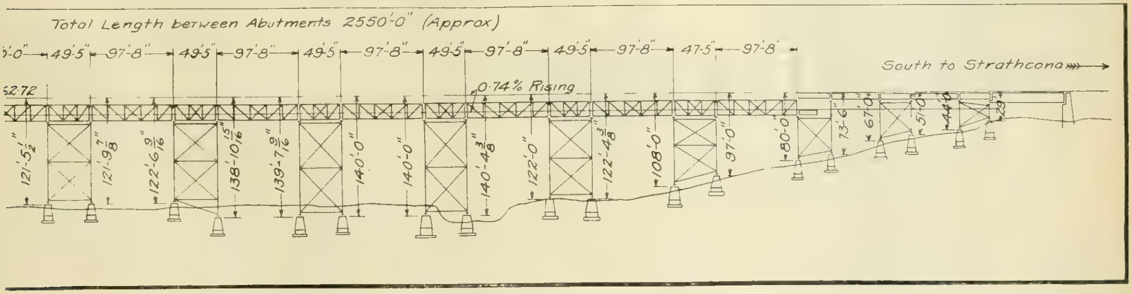
The general diagram shows in detail the arrangement of the highway floor, and gives in general the arrangement of the spans, of the towers, and of the girders and turnouts at the ends of the bridge.

An excellent idea of the method of erection may be obtained from the accompanying illustrations. In the one dated Sept. 30, 1912, the staging is shown complete for one of the 288 ft. main spans, with the span resting upon it. Between the second and third of the high piers may be seen the capped and braced piling, upon which false work similar to that shown between the first and second pier was afterwards erected for the support during the erection of the second of the large spans. This falsework consisted essentially of five strongly braced towers, which support the span at its bottom chord panel points. An excellent idea of the traveller used is given in the illustration dated May 27, 1913. This traveller was arranged to erect not only the main spans, which were set upon falsework, but all the other spans of the structure without the use of falsework. In this illustration, it will be noted that a locomotive had just pushed cars through the under part, and had furnished its outstanding booms with the material which they were to presently put in position.

The work in connection with the steel for the bridge was carried out by the staff and forces of the Canadian Bridge Company, Ltd., of Walkerville, Ont., under the direction of P. B. Motley, M. Can. Soc. C.E., Engineer of Bridges C.P.R. G. E. Roehm is the Canadian Bridge Co.'s Contracting Engineer; C. M. Goodrich is its Designing Engineer, and S. H. Young was in charge of its field work.

An illustration of the completed bridge appeared in Canadian Railway and Marine World for August.

Edmonton Bridge Construction July 29, 1912.



Canadian Pacific Railway Edmonton Bridge—Strathcona End.

Edmonton Bridge Construction Sept. 30, 1912.

Icing Refrigerator Cars.—In replenishing of ice on refrigerator cars in transit, the rule generally observed is that the bunkers shall not sink below half full before refilling. A good rule is to never let the ice fall below the level of the top of the load in the car. In general practice, it is the custom to replenish the ice every 24 to 30 hours, and on long runs the filling stations are so located as to make this possible.

Concrete Telegraph Poles.—Having demonstrated the utility of concrete telegraph poles on its New York Division, the Pennsylvania Rd. is said to be contemplating the placing of this material on its Western Pennsylvania Division, in the expectation that they will serve the purpose as practically in that locality as in the semi tidal swamp districts of the New York Division.

Railway Operating Revenue for June on the large steam roads of the United States amounted to $253,356,489.71, an increase of $15,992,193.36 over June, 1912; operating expenses were $178,394,785.37, an increase of $15,744,779.64; and net operating revenue was $74,961,704.34, an increase of $247,413.72. The operating ratio increased from 68.52 to 70.41%.

First Aid to the Injured on the Canadian Northern Railway.

Canadian Railway and Marine World for Aug., 1912, contained an article describing the activities of the St. John's Ambulance Association in its first aid work on the Canadian Pacific Ry. The Canadian Northern Ry. is also coming along with similar aims in view, under the St. Andrew's Ambulance Association, an organization with headquarters in Glasgow, Scotland, and which outside of Scotland is in friendly rivalry with the first mentioned organization. An understanding exists between the two associations that neither will enter upon the other's home territory, but that abroad the field is equally open to both.

The first seeds of the new work on the C.N.R. were sown in 1911 by recently arrived Scotchmen who had been connected with the Association in the old land, and by whose enthusiasm the work has been brought to the new world, the organization on the C.N.R. being the first on this side of the Atlantic. For the whole C.N.R. system, there is what is called a local committee, with jurisdiction over the work through the entire system. What are termed sections are organized locally for the different shops and terminal yards on the system as desired. As yet, only one section has been put in operation, with the shop section for the Fort Rouge shops at Winnipeg, where the introduction of the work has been attended with a high degree of success, the men taking to it enthusiastically.

To qualify for membership in the association, it is necessary to take a course of instruction, under the direction of a qualified medical man, which takes the nature of lectures and practical work, nine lectures in all. The text book followed is the "Ambulance Hand Book," by Sir Geo. Thos. Beatson. The following is a synopsis of the work covered, outlined according to lectures:

First lecture—Introductory remarks, explanation of the scope and object of lay help in ambulance work, special attention being drawn to the need for it as well as the usefulness and simplicity of it. Short sketch of the principal features of the human anatomy, and a description of the functions of circulation, respiration, excretion, secretion.

Second lecture. Short account of the skeleton, with a brief description of the structure and variety of joints. Fractures, their varieties, causes, symptoms and dangers; their temporary treatment and the apparatus necessary for it. Dislocations, how they differ from fractures, and the first aid in such cases. Illustrations of the temporary treatment of fractures, collar bone, upper arm, forearm, hand, thigh, leg, foot, lower jaw, pelvis, spine.

Edmonton Bridge Construction March 11, 1913.

Third lecture—Practical work, when the members will exercise themselves on the use of the triangular bandage, and the temporary treatment of the different fractures mentioned in the previous lecture.

Fourth lecture—General description of the circulation of the blood and the mechanism by which it is carried on. Distinction between arterial, venous and capillary hemorrhage. Names of the arteries of the body, with their situations. Points were arterial circulation may be arrested by pressure. Dangers of hemorrhage. General treatment of hemorrhage, internal or external. Three kinds of tourniquets for arresting hemorrhage. Showing method of applying tourniquets and making improvised ones, giving illustrations of the arrest of hemorrhage from any part of the body.

Fifth lecture—Practical work, when the members of the class will exercise themselves in the arrest of hemorrhage in various situations, and in the temporary treatment of compound fractures

Sixth lecture —Respiration, its objects and mechanisms. Fainting, its causes, symp- [illegible] apparently drowned, or suffocated by hanging, poisonous gases or choking. First aid in cases of burns and scalds, bites by animals possibly rabid, tears from machinery, crushed and bruised parts, stabs. Show [illegible] treatment of fractured ribs.

Seventh lecture—Practical work when the members will exercise themselves in performing artificial respiration, and in the arrest of hemorrhage from supposed cases of ruptured varicose veins, stabs, tears from machinery, and gunshot wounds.

Eighth lecture—Symptoms and first treatment of shocks and collapse. First aid in cases of those stunned by a fall or injury to the head, convulsions, epilepsy, sunstroke, persons found insensible, suspected poisoning, frost bite, lime in the eye, supposed death.

Ninth lecture—Devoted to transport work, special attention being directed to the proper carrying of the stretcher, manner of placing it, the loading and unloading of it, the position of the patient in it, suggestions as to overcoming difficulties in the road, hints as to conveyance of stretchers by rail and other means of conveyance. General account of the improvised methods of removing injured persons when no stretchers or regular conveyances are available.

Edmonton Bridge Construction May 27, 1913

The above gives a brief survey of the scope of the work touched upon in the first year. There is one such class each year, the lectures extending over nine weeks, a lecture a week. With the Fort Rouge shop section, all the instruction work is conducted by the C.N.R. surgeons, of whom there are three, Dr. C. A. MacKenzie giving the lectures, and the other two assisting in the work of demonstrating the methods followed.

A roll book of the attendance at the lectures and demonstrations is kept, and in order to be eligible to try the examination which follows the course of training, it is necessary to have an attendance at 8 out of the 9 lectures. The examination consists of a thorough questioning on the work covered in the course, and demonstrations on the part of those undergoing the examination on their ability to perform the various first aid methods previously taught. The examination is conducted by an outside surgeon and 50% is necessary to pass. The names of the successful candidates are forwarded to the head office in Glasgow, where they are entered in the the association's books, and certificates of qualification sent to the successful ones.

The member must remain the balance of the year in which he passes without further advancement, but on the expiration of that period he can take a similar course to that previously taken, going more deeply into the subject as the work progresses, and also studying such matter as nerves, digestion, etc. For this there is no prescribed course of training, it being left to the instructor to give more advanced knowledge along the lines already followed. This is followed by an examination as before, in which the candidate must obtain 70%, entitling the successful ones to a bronze medallion. This is as high as the association takes a man. The holder of the bronze medallion must submit himself yearly to an examination along the lines he has already passed in, in order to retain this qualification. Yearly vouchers are issued to the successful retainers of the qualification. A gold medal for long service is issued to all those possessors of a bronze medal who have been connected with a section for 15 years.

The first year men, as they qualify, become members of the local section. These sections are divided up into teams in the different shops and parts of the shop, and the leaders of the teams are as a rule the bronze medallists, who captain the work. Four usually comprise a team.

In the Fort Rouge shops the work is well planned. In the stores department there is kept a large stock of first aid appliances and drugs from which are supplied local first aid kits in the different shops. These local kits contain the following equipment: 9 triangular bandages; 3 each of 1, 1½, 2 and 3 in. roller bandages; packet of gauze; ¼ lb. cotton wool; packet of styptic wool;

packet or boracic wool; 8 oz. bottle each of carbolic acid, salvolatile, carron oil, arnica and olive oil; bottle of smelling salts; box of carbolic salve; box of boracic ointment; card of safety pins; tourniquet; scissors; tweezers; adhesive plaster; boracic lint; needles; eye shade, and small towel. With each kit, there is a stretcher and a full set of 14 splints. In the car department, additional provision is made by having a local store of stretchers, splints, etc., in the office of the general foreman, which is centrally located to all the buildings.

Inspection of C.N.R. St. Andrew's Ambulance Association First Aid Work by the Duke of Connaught.

Demonstration of First Aid Work Before the Duke of Connaught by C.N.R. St. Andrew's Ambulance Association.

At convenient points in each building there are steam connected hot water heaters attached to the columns of the buildings, marked on the outside with a red cross. These hot water connections must only be used for first aid purposes, use for other causes being prohibited.

In each shop, alongside the first aid kit, there is a small blackboard, on which are entered the names of the members of the team who are to use that particular kit. An air whistle alongside is the signal in the case of an accident for those men to instantly drop their work and prepare to render first aid to the injured.

The officers of the Fort Rouge shop section are: President, A. M. McCowan, General Car Foreman; Commandant, D. Mowat, Assistant Foreman Freight Repair Yard; Assistant Commandant S. Angus; and Sec.-Treas. J. Candline, Assistant Foreman Freight Repair Track. Considerable activity is being demonstrated in this section, as in the short time of its existence about 40 members have qualified.

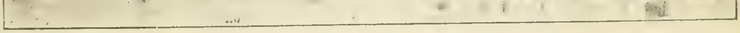
The local committee for the Canadian Northern Ry. has the following officers: Honorary President, Sir Wm. Mackenzie; Honorary Vice President, Sir Donald Mann; President, A. E. Cox, General Storekeeper; Vice President, A. H. Eager, Supt. of Shops; Secretary, E. J. Gillingwater, Chief Clerk to General Storekeeper; Treasurer, J. E. M. Firby, Foreman of Mill; Committee, T. J. Lowe, Chief Clerk to General Manager, O. C. Bishop, Asst. Supt. of Dining Cars, J. Hough, Foreman Machine Shop, G. Lyons, Foreman Upholsterer, W. Clegg, Foreman Air Brake Dept., F. McDowell, Asst. Storekeeper, D. Galloway, General Foreman Locomotive Dept., W. Watt, General Foreman Freight Sheds, and T. A. Musgrave, Foreman Freight Car Repair Tracks. On this committee devolves the work of organizing sections all over the system, several of which are already in contemplation.

The heads of the Canadian Northern are doing their best to encourage the work, many valuable prizes being offered individually and to the teams competing in the general competitions held annually. Among the team prizes may be mentioned a large silver loving cup, presented by D. B. Hanna, Third Vice President, to be competed for annually, and five gold medals extra for the members of the winning team, the donation of M. H. MacLeod, General Manager. These are to be competed for by teams from all over the system, and as the sections at various points expand, some keen competition is to be expected.

The Fort Rouge section is highly elated over the successes of last fall. On the C.P.R., the St. John's Ambulance Association holds sway. The winners of the competitions of the Western and Eastern Lines met last fall, the team from the Western Lines being declared the winners. The C.N.R. Fort Rouge section challenged this winning team, and in the demonstration which followed, proved capable of defeating the champions of the C.P.R. system.

Blende River Viaduct, Canadian Northern Ontario Railway.

The Blende River viaduct, at mileage 24 east of Port Arthur, on the C.N.O.R., recently completed, is the largest of the many steel structures on that line. Although the stream crossed is but a rivulet, the wide and deep valley necessitated a structure of some magnitude to conform to the location and grade adopted, the alternative being a more circuitous route, which would have increased the length of line several miles.



Blende River Viaduct, Canadian Northern Ontario Railway.

The structure is 2,300 ft. long, the maximum height above water level being 130 ft. It comprises 14 spans of 75 ft., 15 towers of 45 ft., with six 60 ft. spans and four 40 ft. towers at the ends. The foundations of the two abutments and end pedestals are on rock; the remaining pedestals are built upon pile foundations.

The structure is designed to Dominion Government Specification, 1908, Class heavy loading—that is, a capacity to safely carry two 180 ton locomotives, coupled together, followed by a train load of 4,750 lbs. per lin. ft.; or, in other words, the structure could safely be loaded from end to end with locomotives, each weighing in working order 180 tons.

The ties used are 10 by 12 ins. by 14 ft., with every fourth tie 18 ft. long, on which is carried on one side of track a foot walk, with substantial hand railing.

The concrete substructure was started May 3, 1912, and finished July 30, 1912. The first span of the superstructure was placed Aug. 20, 1912, and the last span, or most easterly, in position Dec. 28, 1912.

The concrete substructure was built by J. A. Whalen, subcontractors Kennedy Construction Co., the total yardage being about 3,600 cu. yds. About 2,000 piles were used in the foundations. The steel superstructure was built by the Canadian Bridge Co., Walkerville. The weight of steel is about 5,000,000 lbs. The total cost was nearly $350,000.

The viaduct was designed under the supervision of W. P. Chapman, Bridge Engineer, Mackenzie, Mann and Co., Ltd.

Telephone Train Dispatching on the Intercolonial Ry.—F. P. Gutelius, General Manager, Canadian Government Railways, is reported to have stated recently, that a telephone dispatching system will be installed almost immediately on the St. John-Moncton section of the Intercolonial Ry., and that tenders have been asked for the necessary equipment. It is said that at the same time the automatic block signalling system will be installed.

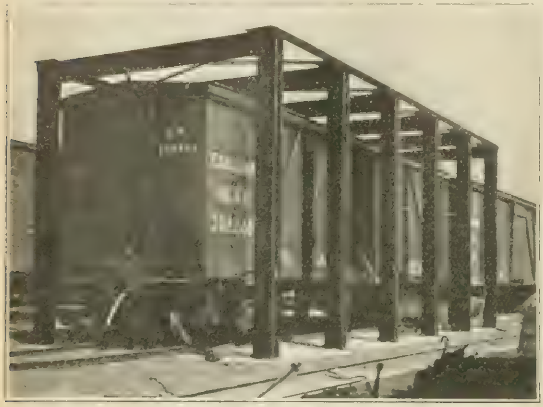
Railway Lands Patented.—Letters patent were issued, during August, in respect of railway lands in Manitoba, Saskatchewan, Alberta and British Columbia, as follows:—

	Acres
Canadian Northern Ry.	[illegible]
Grand Trunk Pacific Ry	[illegible]
Qu'Appelle, Long Lake and Saskatchewan Rd. and Steamboat Co.	[illegible]
Total	[illegible]

Railway Mechanical Methods and Devices.

Steel Car Straightener at Canadian Pacific Railway West Toronto Shops.

The advent of all steel, and steel frame cars, into modern railway practice has involved a readjustment of the means of handling repairs on such equipment. Whereas, in wooden equipment, when a car became partly wrecked, the members were either left more or less intact, or else completely destroyed, with steel construction, the ability of the members to be distorted without serious injury to the material, other than the necessity of bending back into shape, has made possible the continued use of the same members, the necessary repairs being made thereto without renewal.


Frame for Straightening Bent Steel Cars.

One of the most frequently encountered difficulties with steel equipment in a wreck is that either the sills or frame become sprung, either from a too heavy end blow, or from a side swipe. In wooden equipment, this would require the replacing of the damaged member, but with the steel, if the proper facilities be at hand, the member may be bent back into shape and is then, to all practical purposes, provided it was not cracked in the accident, as good as new.

The C.P.R. has a great many steel frame cars of the outside Z bar frame construction. Many of these are damaged in the course of service, and to facilitate repairs to them, the bending frame shown in the accompanying illustration, is used. The frame shown is in use in the West Toronto shops, and is similar in design, but somewhat larger, than the original one of this type built at the company's Hochelaga, Montreal, shops.

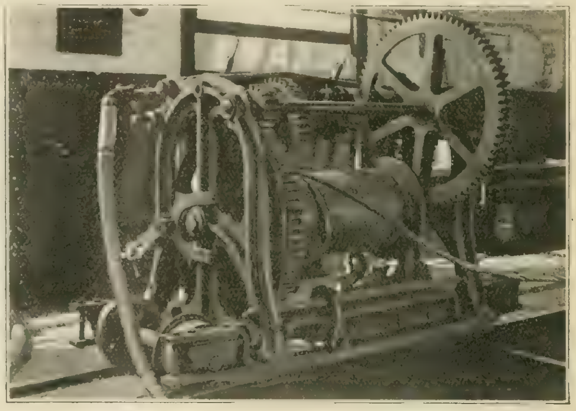
The frame comprises a double row of steel columns at 14 ft. centres, there being 6 pairs, 7 ft. apart. The columns are built up of two 12 by 3 in. channels, 3½ ins. apart, back to back. Rivetted to each channel [illegible] 6 by 3 in. I beam, stiffening the column in both directions. These columns are mounted in a concrete base, 17 ft. wide, and the columns are tied together and diagonally braced at the top. In each column, between the channel backs, there is a cast iron block, 8 ins. deep, on each side the pair being tied together by two ¾ in. bolts. Passing through the pair of blocks is a 2½ in. square thread screw, 24 ins. long, with a pitch of four threads per inch. The inner end of the screws have bearing plates for bearing up against any part of the car, and the outer end is squared for a wrench. By means of the ¾ in. tying bolts, the jack screws may be located in position on the column, so that the sills or any part of the frame may be pressed back into position. In cases where the screws are not sufficiently powerful to press the frame back into shape, the practice is to use a jack between the frame column and the member of the car that is to be straightened.

Not only are the members of steel cars twisted side ways, but it frequently happens that, from an end thrust, the sills are sprung upwards in the centre. To meet this difficulty, provision is made in this straightening frame. Between the end pair of columns, bedded in the concrete base, there are at each end four 1¼ in. eye bolts, spaced 1 ft. each side of the rails. In each eye bolt there is a 10 in. ring. To straighten a sill, it is the practice to tie the car down to these rings by passing a chain from the rings over the body bolster or the middle section of the sills. Then, by placing a jack under the ends of the car and jacking up, it is usually possible to bend the sills back.

At the recent annual meeting of the Great North Western Telegraph Co., at Toronto, the board of directors was elected as follows for the current year:—Z. A. Lash, K.C., President; Adam Brown, Vice President; Jas. Hedley, Hon. J. K. Kerr, Æmilius Jarvis, F. B. Hayes, N. Carlton and J. B. Van Every.

Locomotive Tractor in Grand Trunk Railway Shops.

In the G.T.R. Toronto Shops, E. Logan, General Foreman, the old Northern Ry. locomotive house is used for light locomotive repair work principally, the size of the old stalls precluding its use as a locomotive house for the general run of modern motive power. It is large enough to take in a large locomotive without tender, and it is generally in this unattached condition that the locomotives are brought in. As it is only used for repair work, the locomotives are seldom under steam, and cannot come in under their own power, requiring some other agency. Formerly, it was the custom to bring the locomotive in from the turntable by block and tackle, with a locomotive attached to the rope out in the yard. This was a slow process, and required the assistance of the yard crew. A tractor of the design shown in the accompanying illustration is now employed.


Locomotive Tractor for Drawing in Locomotives.

Turntable, with Tractor Control Rod Jointed.

Motion Reversal Links.

The tractor consists of a cast iron frame mounted on wheels, and carrying a steel wire drum, driven from a small air engine on the back of the frame through a train of gears, the air engine being supplied with air through an air hose from the nearest connection. Around the inside of the outer wall of the locomotive house there is a narrow gauge track on which the tractor operates. In the wall at the head of each of the tracks there is an eye bolt to which the tractor is secured at the head of the desired track, by a clamp on each side of the frame, as shown, each side of the clamp containing a turnbuckle to tighten the tractor back into place. This tractor is found most useful.

Turntable Tractor Control in Grand Trunk Railway Toronto Yards.

No G.T.R. locomotives are held over in Toronto, the Mimico locomotive house, west of the city, being used for all locomotives that must remain over. The motive power facilities in the city are in consequence very limited, consisting principally of a coaling plant, and plant for turning the locomotives, the turntable in the accompanying illustration serving that purpose.

This turntable has an air operated tractor, of a type recently described in these columns. Briefly, it consists of a heavy cast iron plate, for weight, mounted on a wheel running on the outside turntable track, the whole attached to the turntable by a hinge connection. The air operating mechanism consisting of a couple of air cylinders, connecting through a train of gears with the track wheel, is mounted on the back of the cast iron frame.

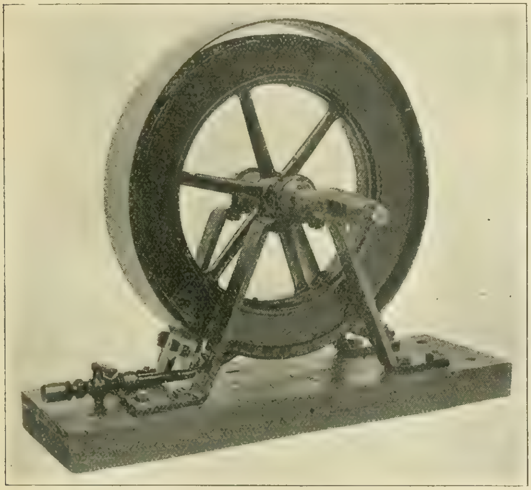
The air connection from external sources comes to the turntable through its centre bearing, and thence to the air motor. The turntable is arranged as to enable operation from either end. Along the side of the turntable there runs a rod, with vertical levers at each end. This rod is broken at the centre, the two portions being connected together through the system of levers shown in the small illustration, which transmit the motion from the one rod to the other in an opposite direction. The object desired in so arranging this rod was that the turntable might be operated positively in either direction, there being no uncertainty as to which direction the table will move when the control lever is swung over. In this arrangement, the swinging of the lever away from the operator at either end causes the table to move in the direction the lever points.

During August, three men were killed and three were injured in the course of railway construction throughout the Dominion. During the same month, 16 were killed and 107 were injured in steam railway service.

Machine for Grinding Angle Cocks at Grand Trunk Railway Port Huron Shops.

In the G.T.R. shops at Port Huron, Mich., there is a small air power machine for grinding in the valves of angle cocks, which is said to be in use in other shops on the system as well. This machine is shown in the accompanying illustration. The propelling means closely resembles the construction of the rotors on impulse turbines. On the periphery of a small wheel there are projecting blades of thin plate, held in place at the sides by annular plate rings secured to the side of the wheel rim. This forms chambers, into which the air blast from the pipe on the left end of the base is directed, this blast striking the forward radial blade, propelling the wheel. Between the supporting members on the wooden base of the machine, there is a section of thin plate, closely fitting up under the rotating wheel, retaining the air blast in the impinging cavity without dissipating. Beyond the end of this piece, and around the balance of the circumference, the rim is protected with a guard strip, as shown.

The valve of the angle cock to be ground is mounted on the end of the air motor shaft, in the manner indicated, and the high speed of the machine rotates the valve in the body of the cock in the usual manner, customarily done by hand or in the lathe.



Machine for Grinding in Angle Cocks.

Lacquer Bake Oven at Canadian Pacific Railway West Toronto Car Shops.

In the passenger car department of the C.P.R. West Toronto Shops, H. R. Naylor, General Foreman, it was necessary recently to build a new lacquer bake oven. As it was required to have the oven of such size as to be able to accommodate all sizes of work, the problem was how to build it to handle all classes of work economically, especially when the major portion of the work is small stuff, requiring small oven space. Consideration had to be given to the best size that would handle all classes of work.

The largest piece that will require to be handled is the long parcel rack over the car seat. These form a very small portion of the total work to be handled. The oven shown in the accompanying illustration is the solution of the problem. On the right is the main oven, lined with galvanized iron, and heated with steam coils in the bottom. The work to be baked is carried on shelves made of smoke box netting. The door is of the vertically sliding type, counterbalanced by weights. For the general run of articles, this small, almost square, oven meets all requirements. To have made it long enough to hold the racks mentioned would have given a greater length than that normally required. To accommodate these long racks, a vertical oven section was built on the left end of the oven as shown, with a swing door in front. This section has no heating coil, but between the main oven and this part there are two sliding doors, which are removed when the long oven is required. This gives a combined oven capable of holding all classes of work, and, at the same time one that requires very little room in proportion to the volume.

Lacquer Bake Oven for General Work, with Vertical End Section for Long Parts.

A Railway Speeder for Fire Protection is in use by the U.S. Forest Service on the San Joaquin & Eastern Rd., which runs through the Sierra National Forest, California. The speeder is a Ford roadster with a wooden rear seat and flanged wheels. It is used to transport fire fighters and fire fighting equipment, as well as supplies from one part of the forest to another. It is also used for patrol purposes. The ranger, or fire guard, who runs the speeder, carries with him an axe, hoe and rake. If he discovers an incipient fire along the right of way of the railway he puts it out by beating the flames or digging a trench surrounding the burning area. Other equipments of this sort may possibly be used in the national forests later on, but there is particular need for the speeder in the Sierra Forest because of the difficulty of transporting fire apparatus by trails and roads there.

The Associated Boards of Trade of Western Canada, meeting at Winnipeg, recently, passed a resolution urging Parliament to take steps to prevent the renewal of charters for the building of railways to companies which did not do a reasonable amount of construction within a specified time, and making it impossible to obtain the renewal of a charter if the line was not put in operation within five years.

The Forging Machine at the Montreal Locomotive Works.

[illegible]

[illegible] spreading the metal [illegible] shape indicated at B, the [illegible]

cross ram grips the two parts, while the end ram forces the metal of the longer piece over on to the short section, welding it together into a homogeneous whole as indicated. The boss thus formed, on being drilled, and the strap likewise drilled for the retaining rivets, is completed.

The next piece to be considered, a boiler brace jaw, is a somewhat more difficult piece of work, being made up of three separate pieces, welded together and upset to the required final form. The base consists of two pieces of flat bar stock as at A in fig. 2, which are first of all welded together at one end to the shape indicated at B, under

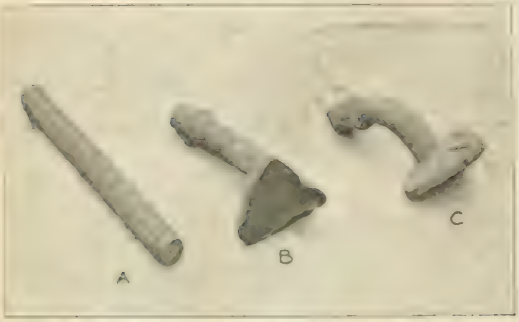


Fig. 1.—Tank Handle Produced on the Forging Machine.

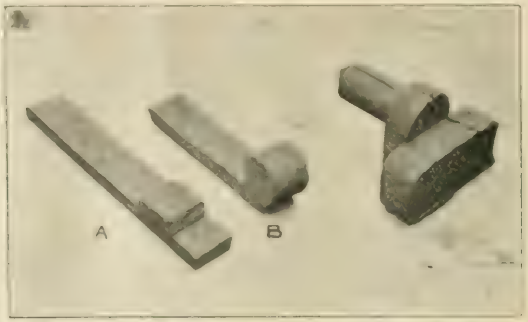


Fig. 2.—[illegible] Produced on the Forging Machine.

[illegible] cated nature as to require a great deal of [illegible]

[illegible] for a certain amount of grinding off of the fins, and the making of the shoulder end fit the pipe of the handle. Before the use of the upsetting machine for the making of such parts, they were usually castings, and when small like this one, were liable to be weak and tend to break. To make them by hand forging would be out of the question, but by the machine they are produced even more cheaply than would be possible by casting. It is of interest to note that a new type of tank handle has been developed as the result of using the forging [illegible]

a Bradley hammer, leaving the near ends of the original flat stock open, and of the [illegible] slipped, making the member ready for the [illegible] shape at C. The shape of each jaw is contained in the stationary and movable jaws and the ram has a projecting blade that [illegible] to the set depth, forms the rounded ends [illegible]

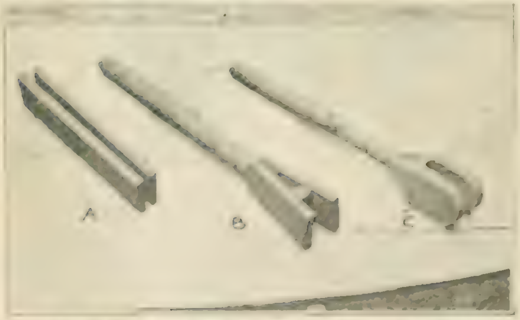


Fig. 3.—[illegible] Produced on the Forging Machine.

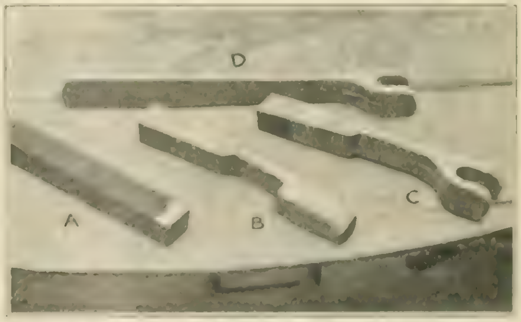


Fig. 4.—[illegible] Produced on the Forging Machine.

[illegible]

tric rod, is made entirely from a single bar of stock, 3½ by 3 ins., without the addition of any further pieces as in the last instance. The original stock piece may be seen at A. The centre of the stock piece is first of all broken down as indicated at B, to the thickness of the final body of the rod, the breaking down being all on one side with regard to the end to be machine forged, the other end being broken down centrally. The next step is the machine forging. The offset broken down part is placed downward in the machine, with the form of the outside part of the jaw contained in the stationary and movable rams, along the lines of cleavage, which may be noted at C in fig. 4. The end ram, with a projecting blade, as in the former instance, is forced into the body of the metal, the metal flowing outward and backward along the blade of the plunger. This is a rather remarkable piece of machine forging, as the end plunger has no assistance in entering as in the last example, having to force its way through the solid metal, displacing the latter into the form of the side plunger, with the ends formed in the face of the end plunger itself. The opposite end to this forged part is next drawn out under the steam hammer to form the part that is attached to the eccentric. The whole is subsequently machined.

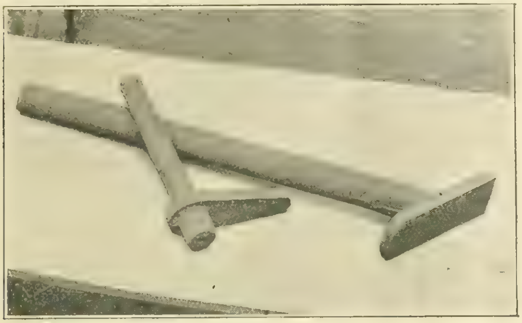


Fig. 5.—Grate Shaker Shaft and Smokebox Brace Produced on the Forging Machine.

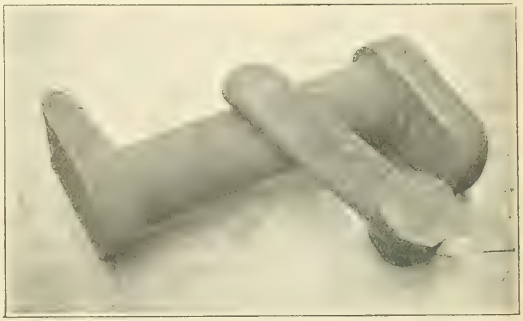


Fig. 6.—Spring Hanger and Rocker Barrel Produced on the Forging Machine.

A very complicated piece of machine forging is shown to the right in fig. 2. This is a link saddle for the Stephenson link motion, and is made in the forging machine, from 3½ by 3 in. stock, in one blow, the stock having first of all been roughly shaped to size under the steam hammer. This being considered a specially fine sample of machine forging, no details of the steps involved could be obtained. It is a most interesting piece of work, and demonstrates probably as well as it is possible to do, the scope of the machine and its possibilities under skilful management.

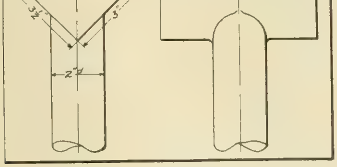


Fig. 7.—Pilot Heel Brace from Forging Machine.

A couple more examples of the forging machine work are shown in fig. 5. The member on the left is a grate shaker shaft, made from a single length of 1¾ in. round stock. The first step in its production is to put a bow in the stock at the point where the offset arm is to be located. The centre of the bar stock at the eccentric point is 3½ ins. from the centre of the main bar centre line. This bend in the stock is given under the steam hammer. The stock at this stage resembles an offset crank shaft. With the offset upward, the stock is placed in the forging machine, the rear face of the offset arm being formed in the cross dies of the forging machine, the end plunger forcing the bent part of the arm up into these side dies, spreading it upward in the die cavity, the front being formed by this plunger, which at the same time upsets the end from 1¾ to 2 ins. in size to the shape shown in this illustration.

The other part shown in fig. 5 is a smoke box foot brace. The original stock is first of all bent at the end at right angles, leaving sufficient stock in this bent end to form the finished foot. The bent stock is then gripped in the cross rams of the machine, which contain the form of the rear face of the foot, the lengthwise ram forcing the metal into the pockets of the side rams, the metal at the same time from the squeezing of the end plunger, floating downward to form the lower part of the foot from the part of the bar that was bent upward.

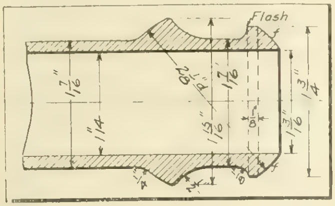


Fig. 8.—Forged End of Schmidt Superheater Tube.

The small spring hanger in fig. 6, the boss of which was formed in the forging machine, is a simple job, the stock being first of all drawn down roughly to shape under the steam hammer and finished by machine forging. The other member in this illustration is a rocker barrel, and serves as a fair sample of the size of work that can successfully be handled in the forging machine. Both ends of the rocker are formed in the machine, without any preliminary preparation under the steam hammer, as in some of the other examples. A straight squeeze of the ram on the end causes the metal to flow upward to form the arms. The ends are formed separately, heating each independently and upsetting. This piece is considered to be probably the most difficult undertaken, on account of its large size.

Another instance of heavy forging machine chine is the pilot heel brace shown in fig. 7. This heavy end forging is upset and formed in one heat in the same operation. The 2 in. round stock is held between the cross dies, the latter containing the form of the rear portion of the brace head, the plunger carrying the four faced form of the end projection. The forward movement of the ram upsets the stock end, forming it out into the final shape.

Another instance of forging machine work on small stock will suffice to illustrate the usefulness of the machine in the railway blacksmith shop. The ends of the superheater pipes in the Schmidt superheater are of the form shown in fig. 8. When first introduced, the end swelling was made on the tubes by shrinking a collar over the end, and then machining down on the outside to the final form. This latter part of the operation was a long and expensive one, as only the ball surface on the very end required a finished surface. These tube ends are now upset in the forging machine, all in one operation. The outer form of the tube end, with the exception of the portion required to be finished, is carried in the cross dies of the machine. On the ram of the machine is a long tit, the internal diameter of the tube, around the shoulder of which is the die formation for the finished end part of the tube. The ram tit prevents the inward collapse of the tube, the end upsetting to the shape shown. Along the edge indicated there is a projecting flash following the upsetting, which is trimmed off in the machine when cold. With this method of forming the end only one surface requires to be machined.

Wireless Train Dispatching.—After a careful investigation the Superintendent of Telegraphs of the Atchison, Topeka and Santa Fe Ry. has come to the conclusion that it is not advisable to install wireless telegraph apparatus along the railway, not only because of the expense of installing and maintaining the stations, but also for the reason that wireless telegraph communication can too easily be interfered with to make it sufficiently reliable for railway use.

As an Adjunct of Car Refrigeration, pre-cooling applied to loaded cars has been in operation for a period of from 2 to 3 years. There are three pre-cooling plants of large capacity in California, and one in Texas, all giving satisfactory results. In addition to these large plants, there are smaller ones operated by individual shippers, giving varying degrees of success. It is claimed that pre-cooling is destined to become an important factor in transportation refrigeration, especially in the case of the more perishable fruits.

Orders by Board of Railway Commissioners for Canada.

[illegible] record of the Board's pro- [illegible] to rebuild [illegible] C P R [illegible] build cattle [illegible] —Authorizing C.P.R. to build [illegible] from Golden, B. C. [illegible] C.P.R. to build [illegible] C.P.R. to build its [illegible] P.R. to build farm [illegible] m in Beaver, B.C. [illegible] location of portion [illegible] and approving re- [illegible] oving revised location of [illegible] ts Indian Reserve, Range [illegible] t. Thomas, Ont., for order [illegible] arrangement on U.S. [illegible] St. Thomas [illegible] a, St. Cath- [illegible] ss Michigan [illegible] orizing C.N. Ontario Ry. [illegible], O'Connor Park, Sudbury, [illegible]

20109. Aug. 15 [illegible] Northern [illegible] ng at corner of Twen- [illegible] by Sept. 1. [illegible] C.N. Ontario Ry. [illegible]

20112. Aug. 16.—Authorizing C.N. Ontario Ry. to build bridge across Indian River, at mileage 106.4 [illegible]

[illegible] Ry. to cr[illegible] spur and [illegible] m., Sask.

[illegible] connection [illegible] Branch [illegible] East, [illegible] We [illegible]

20120. Aug. 15. [illegible] evised location of G.T. Pacific Ry., [illegible] 43.24 to 49.26, Cariboo District, B.C.

20121. Aug. 15.—Authorizing G.T. Pacific Ry. to build spur for Town of Tofield, Alta.

[illegible] Headingly Parish, Man.

20123. Aug. 15.—Authorizing C.P.R. to operate over crossing at Delson Jct., without first stopping trains.

20124. Aug. 14.—Approving changes in location [illegible] vicinity of St. Marguerite St., St. Henri, Montreal.

[illegible] mileage 10.4, Elton Municipality, Brandon District, Ma[illegible]

20126. Aug. 16.—Authorizing G.T. Pacific Branch Lines Co. to build spur from its Yorkton Branch to the power house, Yorkton, Sask.

20127. Aug. 18.—Authorizing G.T.R. to build siding for MacDonald Agricultural College, St. Anne de Bellevue Parish, Que.

20128. Aug. 19.—Authorizing Lake Erie and Northern Ry. to build under G.T.R. at station [illegible], Ont.

20129. Aug. 14.—Authorizing Lake Erie and Northern Ry. to build across Townsend, McCall, Wilson and Victoria Sts., Simcoe, Ont.

20130. Aug. 14.—Authorizing Lake Erie and Northern Ry. to raise Grand Valley Ry. tracks [illegible] ft. to meet L.E. & N.R. elevation at county line between Brant and Waterloo Cos. at station 868+97.

20131. Aug. 16.—Authorizing Edmonton, Dunvegan and British Columbia Ry. to build across highway between Secs. 36 and 1, Tps. 68-69, R. 2, w. 5 m., Alta.

20132. Aug. 18.—Approving revised location of Edmonton, Dunvegan and British Columbia Ry. from mileage 112.33, through Tps. 68-69, R. 2, w. 5 m., Alta.

20133. Aug. 15.—Ordering C.N. Ontario Ry. to restore former connection between Napanee and Tamworth, Ont.

[illegible] and Buffalo Ry. to divert highways at four points in Pelham Tp., Ont.

20135. Aug. 15.—Dismissing application of Empire Limestone Co. for authority to build tunnel under Carroll Bros.' right of way on Lot 5, Con. 1, Humberstone Tp., Ont.

[illegible] Dominion Sugar Co. for readjustment of rates on sugar, in carload quantities, from Wallaceburg to Toronto and from Wallaceburg to Hamilton, over C.P.R., G.T.R., P.M.R., and Chatham, Wallaceburg and Lake Erie Ry.

20137. Aug. 21.—Authorizing Vancouver, Victoria and Eastern Ry. and Navigation Co. to build spur to Kilgard Fire Clay Co.'s works, Kilgard, B.C.

20138. Aug. 19.—Authorizing New York Central Ry. to remove station at Primeau, Que., to the east of G.T.R. at Kanawaki Golf Club grounds.

20139. Aug. 19.—Ordering C.N. Quebec Ry. to build passenger station at Arundel.

20140. Aug. 19.—Ordering C.P.R. to install improved type of illuminated electric bell at Main St. crossing, Milverton, Ont.

20141. Aug. 20.—Authorizing G.T. Pacific Ry. to carry traffic over portion of its line between Tete Jaune and second crossing of Fraser River, B.C., mileage 1095.3 to 1189.0.

20142. Aug. 15.—Approving revised location of portion of C.P.R. from mileage 37.35 southeasterly to mileage 57.18, Kootenay Central Branch, East Kootenay District, B.C.

20143. Aug. 19.—Approving location of Esquimalt and Nanaimo Ry. stations at Union Bay and Courtenay, B.C.

20144, 20145. Aug. 20.—Approving revised location of G.T. Pacific Branch Lines Co.'s Tofield-Calgary Branch through north half of Sec. 10, Tp. 42, R. 21, and through Sec. 21, Tp. 29, R. 24, w. 4 m., Alta.

20146. Aug. 20.—Authorizing C.P.R. to build bridge 0.16 for double tracking, over Yamaska River, near Brigham Jct., Que.

20147. Aug. 22.—Approving location of Georgian Bay and Seaboard Ry. (C.P.R.) shelter on west half [illegible] Tp., Ont.

20148. Aug. 20.—Authorizing C.P.R. to build bridge 88.6 and additional track at mileage 88.73, Toronto Subdivision, across and over G.T.R.

20149. Aug. 20.—Approving revised location of C.P.R. [illegible] easterly to mileage 115.59; and authorizing building of same across certain highways.

20150. Aug. 20.—Authorizing C.P.R. to build bridge 37.9, near Bethany Jct., Toronto Subdivision, Ont.

20151. Aug. 25.—Authorizing C.P.R. to divert surveyed trail in Secs. 23 and 14, and between Secs. 14 and 11, Tp. 22, R. 3, w. 4 m.; and to build at grade [illegible] its Ba[illegible] Easterly Branch, Alta.

20152. Aug. 22.—Authorizing Essex Terminal Ry. to build at grade across Langlois Road, and existing highway, being boundary between Sandwich West [illegible] Ont.

20153. Aug. 22.—Ordering Campbellford, Lake Ontario and Western Ry. (C.P.R.) to provide cattle pass of same dimensions as that furnished by C.N.R. for J. R. Irwin, Cobourg, Ont.

20154. Aug. 22.—Authorizing Montreal Tramways Co. to build across G.T.R. on Notre Dame St., at intersection of St. Ferdinand St., Montreal.

20155. Aug. 21.—Authorizing Winnipeg North Eastern Ry. to build across C.P.R. Emerson Branch, in Roman Catholic Mission Lot 312, St. Boniface, Man.

20156. Aug. 25.—Authorizing Canadian Northern Ry. to build across trail in S.W. ¼ Sec. 9, Tp. 7, R. 25, w. 4 m., Alta.

20157. Aug. 25.—Authorizing G.T. Pacific Ry. to build bridge across Cottonwood Creek, mileage 211.6, Wolf Creek West, B.C.

20158. Aug. 23.—Approving revised location of Dominion Atlantic Ry. North Mountain Branch, between Grafton and Tory Lane, Cornwallis Tp., N.S.

20159. Aug. 23.—Approving plans of Dominion Atlantic Ry. station at Annapolis Royal, N.S.

20160. Aug. 22.—Authorizing Midland Ry., C.P.R., C.N.R. and G.T.P.R. to operate trains over crossings within the scope of interlocking plant installed in Parish Lot 55, St. Boniface, Man.

20161. Aug. 22.—Authorizing C.P.R. to divert road in Lot 10540, Kootenay District, B.C.

20162. Aug. 22.—Authorizing C.P.R. to build spur for British Columbia Sugar Refining Co., Regina, Sask.

20163. Aug. 18.—Approving location of Canadian Northern Ry. Alsask Branch through Tp. 26, R. 23-26, w. 3 m., Sask., mileage 105.42 to 125.45.

20164. Aug. 18.—Approving revised location of G.T. Pacific Ry. main line, mileage 138.19 to 149.41, Prince Rupert East, through Squin-Lix-Stat Indian Reserve, Cassiar District, B.C.

20165. Aug. 25.—Authorizing C.P.R. to cancel siding agreement of July 17, 1909, with Nelson-Ford Lumber Co.

20166. Aug. 23.—Amending order 19236 by providing that Campbellford, Lake Ontario and Western Ry. (C.P.R.) and Canadian Northern Ry. build the bridge and approaches over its own line on farm of J. Pearse, in south ½ Lot 4, Con. 4, Scarboro Tp., Ont.

20167. Aug. 19.—Amending order 19500, May 29, re removal of C.P.R. tracks at Herbert, Sask.

20168. Aug. 25.—Authorizing G.T. Pacific Ry. to build bridge across Dome Creek, mileage 273, Wolf Creek West, Cariboo District, B.C.

20169. Aug. 26.—Approving revised location of G.T. Pacific Ry. main line from west boundary of Lot 4900 into Fort George Indian Reserve, mileage 459.61 to 466.11, east of Prince Rupert, B.C.

20170. Aug. 19.—Authorizing G.T. Pacific Branch Lines Co. to build spur for Lyall-Mitchell Co. from its Melville-Regina Branch across Regina Municipal Ry. to the G.T.P.R. hotel site in Regina, Sask.

20171 to 20174. Aug. 26.—Authorizing G.T.R. to [illegible] Ontario Granite Crushed Stone Co., Muskoka Wharf, Ont.; Brandon's Pressed Brick and Tile Co., Milton, and Britnell and Co., Somerville Tp., Ont.

20175. Aug. 26.—Authorizing Town of Sudbury, Ont., to build grade crossing over C.P.R. Sault Branch at intersection of Regent and Riverside Sts. with Copper Cliff Road.

20176. Aug. 18.—Authorizing County of Richelieu, Que., to build highway under Quebec, Montreal and Southern Ry., St. Joseph Parish.

20177. Aug. 26.—Authorizing New Brunswick Coal and Ry. to build bridge 1.1.

20178. Aug. 26—Approving location of extension of Niagara, St. Catharines and Toronto Ry. to Lake Front, Lot 12, Con. 1, Grantham Tp., Ont., mileage 0 to 0.68.

20179. Aug. 26.—Approving location of C.N. Ontario Ry. station grounds at Bratton, Sask.

20180. Aug. 21.—Approving location of C.N. Ontario station grounds at Cedar Lake, mileage 162.06 from Ottawa.

20181. Aug. 26.—Approving revised location of Canadian Northern Ry. De Lourdes spur through Sec. 36, Tp. 6, R. 9, w.p.m., Man., mileage 0 to 2.627.

20182. Aug. 26.—Approving plans of Algoma Central and Hudson Bay Ry. station at Frater, Ont.

20183. Aug. [illegible]—Ordering the G.T. Pacific Ry. to erect fences and cattle guards at east end of its station grounds at Ingelow, Man.

[illegible] Aug. [illegible]—Extending to Oct. 30, time within which the C.P.R. [illegible] stock pens at Shellburne, Ont.

20185. Aug. 25.—Ordering Toronto, Hamilton and Buffalo Ry. to employ day and night watchmen at crossing of Bailey St., Hamilton, Ont.

20186. Aug. 25.—Relieving G.T.R. from providing further protection of the first highway west of St. Hilaire Station, Que.

20187. Aug. 23.—Amending order 19957, Aug. 2, re Toronto Suburban Ry. crossing of G.T.R. at Acton, Ont.

20188. Aug. 18.—Authorizing Esquimalt and Nanaimo Ry. to build siding for Scott and Peden, Victoria, B.C.

20189. Aug. 26.—Authorizing Saskatchewan Government to build highway over C.P.R. and G.T. Pacific Ry. in Sec. 28, Tp. 32, R. 27, w. 2 m., Sask.

20190. Aug. 26.—Approving location of C.P.R. station at Conrad, Alta.

20191. Aug. 27.—Extending to Nov. 1, time within which C.P.R. shall install gates at the crossing of Montcalm St., St. Boniface, Man.

20192. Aug. 26.—Authorizing C.P.R. to build additional track across certain highways in Balfour Tp., Ont., Sudbury, Ont.

20193. Aug. 27.—Approving location of C.P.R. station at Port Burwell, Ont.

20194 to 20201. Aug. 19, 18, 26.—Authorizing C.P.R. to build spurs for Pease Foundry Co., Winnipeg; P. Verigin, Brilliant, B.C.; East Kootenay Lumber Co., Jaffray, B.C.; Canadian Rolling Mills

Co., Montreal; Canada Produce Co., Montreal; O. Minnis, Markdale, Ont.; Quinlan and Robertson, Huntingdon Tp., Ont., and International Harvester Co., Lethbridge, Alta.

20202. Aug. 19.—Authorizing C.P.R. to divert road allowance in Sec. 4, Tp. 21, R. 9, w. 4 m., Alta., and to cross same at grade at mileage 60.78 of its Bassano Easterly Branch.

20203. Aug. 27.—Authorizing City of Edmonton, Alta., to extend Peace Ave. across Edmonton, Yukon and Pacific Ry. at grade.

20204. Aug. 27.—Ordering G.T. Pacific Branch Lines Co. to build its Prince Albert Branch across highway in s.e. ¼ Sec. 4, Tp. 33, R. 27, w. 2 m., at mileage 1.5, Sask., by Sept. 15.

20205. Aug. 27.—Authorizing Canadian Northern Ry. and G.T. Pacific Ry. to operate trains over junction of C.N.R. with National Transcontinental Ry. at St. Boniface, Man.

20206. Aug. 28.—Authorizing G.T. Pacific Branch Lines Co. to carry traffic over portion of its Biggar-Calgary Branch between Dodsland and Loverna, Alta., mileage 48 to 104.06.

20207. Aug. 27.—Authorizing Saskatchewan Government to build road under Canadian Northern Ry. right of way in s.w. ¼ Sec. 21, Tp. 20, R. 17, w. 3 m., Sask.

20208. Aug. 27.—Ordering Canadian Northern Ry. to build standard portable passenger and freight shelter and platform and two-car cattle pen at Mulvihill, Man.

20209. Aug. 28.—Relieving C.N. Ontario Ry. from providing further protection at crossing of Ontario St., Cobourg.

20210, 20211. Aug. 28, 27.—Authorizing C.P.R. to build spurs for Moose Jaw Flour Mills, Ltd., Moose Jaw, Sask., and for Sherwin-Williams Co., Winnipeg.

20212. Aug. 28.—Rescinding order 17282, re revised location of C.P.R. Crowsnest Pass Branch, in so far as it approves the location between mileage 15.1 and 31.5; providing that if C.P.R. file new plan showing connection at mileage 19, Board will approve revision from mileage 15.1 to 19.

20213. Aug. 27.—Authorizing C.P.R. to build at grade additional track across certain highways in Sudbury District, Ont.

20214. Aug. 27.—Relieving C.P.R. from speed limitation of 15 miles an hour on its Lauder extension from Tilson to Alida, Man., mileage 28.78 to 54.72.

20215. Aug. 27.—Approving revised location of portion of C.P.R. as built, from mileage 16.91 to 21.79, Schreiber Subdivision, Ont.

20216 to 20218. Aug. 27.—Authorizing C.P.R. to change grade at crossings of road allowances between Lots 28 and 29, Con. 2; between Cons. 2 and 3, and between Lots 26 and 27, Con. 2, Scarboro Tp., Ont., and authorizing building of double track at each point.

20219. Aug. 28.—Approving Express Classification for Canada 3, superseding present Classification 2.

20220. Aug. 28.—Authorizing City of Peterboro, Ont., to build De Laval St. across G.T.R. Midland Branch.

20221. Aug. 28.—Amending order 19936, July 31, re C.P.R. connection with Canadian Northern Ry. spur to Government elevator at Port Arthur, Ont.

20222. Aug. 26.—Recommending to Governor in Council for approval, rules and regulations of Montreal and Southern Counties Ry. Transportation Department.

20223. Aug. 29.—Approving clearances at coaling station at G.T.R. locomotive terminals, St. Lambert, Que.

20224. Aug. 29.—Authorizing City of St. John, N.B., to build a highway bridge over C.P.R. Cantilever Branch at Alexandra St. extension.

20226. Aug. 29.—Approving location of C.P.R. station at Willows, Sask.

20226, 20227. Aug. 29.—Authorizing C.P.R. to build spurs for H. J. Heinz Co., Leamington, Ont., and Western Canada Flour Mills Co., Winnipeg.

20228. Aug. 11.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to divert highway between Lots 8 and 9, Con. B, Hamilton Tp., Ont.; and to build across the Cobourg and Grafton Road by a subway, carrying the road under the C.L.O. & W.R. and G.T.R.

20229. Aug. 26.—Approving location of C.P.R. station at Limerick, Sask.

20230. Aug. 30.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to divert Fourth Depot River in Lot 12, Con. 8, Hinchinbrooke Tp., and to build bridge across same at mileage 33.54 from Glen Tay, Ont.

20231. Aug. 29.—Extending to Oct. 15, time within which C.P.R. was required by order 18512 to install gates at North Vancouver Ferry, Columbia Ave., and G.T.P.R. team crossings at Vancouver, B.C.

20232. Aug. 30.—Amending order 20102 by substituting Suffield for Sheffield where it occurs. (This error had been noticed and corrected in our summary before this amending order was passed.—Ed.)

20233. Sept. 2.—Authorizing C.P.R. to open for traffic portion of double track on its Swift Current Subdivision from Chaplin to Ernfold, mileage 54 to 66.5, Sask.

20234. Sept. 2.—Authorizing C.P.R. to build second track across highways at mileage 82.2 and 81.5, B.C.

20235 to 20237. Aug. 30.—Authorizing Lake Erie and Northern Ry. to build across certain highways in Oakland and Townsend Tps., Ont., and approving location from station 210+51 to 850+54.8.

20238. Sept. 2.—Authorizing C.N. Ontario Ry. to connect its Montreal-Port Arthur Line with the G.T.R. temporarily, pending expiration of lease from J. Morrison, across Eganville Road, Pembroke Tp., Ont.

20239. Aug. 30.—Authorizing C.N. Ontario Ry. to build spur for Point Anne Quarries, Thurlow Tp.

20240. Sept. 2.—Authorizing Alberta Government to build highway across Canadian Northern Ry. in n. ¼ Sec. 30, Tp. 29, R. 20, w. 4 m.

20241, 20242. Sept. 2, Aug. 30.—Authorizing C.N. Ontario Ry. to build across public roads between Lots 32 and 33, and 30 and 31, Con. C, Scarboro Tp., Co. York, Ont.

20243. Sept. 2.—Amending order 20058, Aug. 11, re spur across Canadian Northern Ry. in Cory Municipality, Sask., same to be built by W. A. Silverwood, Saskatoon, Sask., and not by W. Alexander, Silverwood, Sask.

20244. Aug. 30.—Authorizing C.P.R. to build spur for Dunmore Development Co., Medicine Hat, Alta.

20245, 20246. Aug. 30.—Suspending for 30 days from date the effective date of advanced rates in Supplement 17 to Tariff C.R.C. W-1615, and Supplement 24 to Tariff C.R.C. W-1713.

20247. Sept. 2.—Approving revision in grade of portions of C.P.R. main line from Farnham northwesterly to St. Johns, Que., mileage 6.35 to 10.89.

20248. Sept. 2.—Relieving G.T.R. from providing further protection at the first public crossing west of Colborne station, Ont.

20249. Sept. 2.—Authorizing C.N. Alberta Ry. to build spur to Jasper Park Collieries across public road between Sec. 7, Tp. 49, R. 27, and Sec. 12, Tp. 49, R. 28, w. 5 m., Alta.

20250. Aug. 30.—Approving plans of C.P.R. bridge 112.0 over Wyandotte St., Windsor, Ont.

20251. Sept. 2.—Authorizing Edmonton, Dunvegan and British Columbia Ry. to build across certain highways in Alberta.

20252. Sept. 5.—Authorizing Lake Erie and Northern Ry. to build across 3 highways in Brantford Tp., Ont.

20253. Sept. 3.—Amending order 20134, Aug. 16, re diversion of highways in Pelham Tp., Ont., by Toronto, Hamilton and Buffalo Ry.

20254. Sept. 5.—Authorizing Ontario Hydro-Electric Commission to erect 40,000 volt line across C.P.R. on Arthur St., Elmira.

20255. Sept. 4.—Authorizing Edmonton, Dunvegan and British Columbia Ry. to build across 26 highways in Alberta.

20256. Sept. 4.—Approving plans and specifications of Morrison drain, to be built under Michigan Central Rd. in Harwick Tp., Ont.

20257. Sept. 5.—Recommending to Governor in Council for sanction London & Lake Erie Ry.'s Book of Rules.

20258. Sept. 3.—Authorizing C. N. Alberta Ry. to build spur to Wellman Gravel and Supply Co. across public road between Secs. 30 and 29, Tp. 54-1, w. 5 m.

20259. Sept. 4.—Authorizing Canadian Northern Ry. to build across Coteau St., Moose Jaw, Sask., by structure carrying highway over railway.

20260. Sept. 3.—Authorizing Canadian Northern Ry. to build spur for A. MacDonald Co., Ltd., across Vickers St., to serve Lots 417 and 418, Wiley Addition, Fort William, Ont.

20261. Sept. 5.—Authorizing C.N. Western Ry. to cross C.P.R. main line overhead in Sec. 2-13-6, w. 4 m., Alta.

20262. Sept. 4.—Authorizing C.P.R. to build additional track across Quebec, Montreal and Southern Ry., at mileage 18.81 from Farnham, on its main line from Farnham to St. Johns, Que.

20263. Sept. 4.—Authorizing C.P.R. to open for traffic portion of its Weyburn Westerly Branch from Assiniboia to Woodrow, mileage 112 to 145.7, Sask.; speed of trains to be limited to 18 miles an hour.

20264. Sept. 4.—Authorizing C.P.R. to build additional track on bridge across C.N. Ontario Ry. at mileage 92.84, Toronto Subdivision, in Lot 4, York Tp.

20265. Sept. 5.—Approving location of C.P.R. station at Dand, Man.

20266. Sept. 4.—Authorizing C.P.R. to build bridges 19, near Mitigan, B.C., and 97.2, over Vermillion River, near Larchwood, Ont.

20267. Sept. 4.—Extending, to Nov. 1, time within which C.P.R. is required to complete diversion of Nine Mile Road, in Lots 5 and 7, Con. 9, South Gower Tp., Ont.

20268. Sept. 3.—Authorizing C.P.R. to open for traffic portion of its double track from Farnham to Iberville Jct., Que., 12 miles.

20269. Sept. 3.—Authorizing C.P.R. to build bridge 88.29, near Glacier, B.C.

20270. Sept. 6.—Authorizing C.P.R. to build additional track across 56 highways, mileage 55.39 to 110.5, Swift Current Subdivision, Alta.; and mileage 0 to 6, Medicine Hat Subdivision, Alta.

20271. Sept. 4.—Authorizing G. T. Pacific Ry. to build two spurs for Northern Lumber Co., Edmonton, Alta.

20272. Sept. 4.—Authorizing G. T. Pacific Branch Lines Co. to build Y from its Cutknife Branch at mileage 47, in n.w. ¼ Sec. 10-45-23, w. 3 m., Sask.

20273. Sept. 5.—Authorizing G.T. Pacific Branch Lines Co. to carry traffic over portion of its Regina-Boundary Branch, between Talmage and Boundary Line, mileage 66.5 to 155; speed of trains to be limited to 25 miles an hour.

20274. Sept. 3.—Amending order 19643, June 16, re location of G. T. Pacific Branch Lines Co.'s stations in Cariboo District, B.C., by substituting G. T. Pacific Ry. for G. T. Pacific Branch Lines Co.

20275. Sept. 3.—Approving location of G. T. Pacific Ry. stations at Mount Robson, Albreda and Eddy, B.C., and rescinding order 19010, April 8, in so far as it approves of stations at Mount Robson and Albreda.

20276. Sept. 3.—Authorizing G. T. Pacific Ry. to build its Lake Superior Branch across highway between Lots 20 and 21, Con. 3, and Arthur St., Neebing Tp., Ont.

20277, 20278. Sept. 4, 2.—Authorizing G.T.R. to build sidings for Goodyear Rubber Co., Bowmanville, and John Heney and Son, Ottawa, Ont.

20279, 20280. Sept. 5, 3.—Authorizing G.T.R. to rebuild bridges 113, over Coaticook River, at milepost 164.98, District 2; and 241, at mileage 52.29, over Portage Creek, Dewittville Parish, Que.

20281, 20282. Sept. 3, 5.—Authorizing G.T.R. to build siding on Lot 23, Raleigh Tp., now in Chatham, Ont., westerly, connecting with C.P.R. spur there, and siding and spur from south of Main St., Welland, Ont., for Canada Forge Co.

20283. Sept. 5.—Approving clearances of tramway at G. T. R. siding at Lindsay, Ont.

20284. Sept. 5.—Authorizing G.T.R. to build siding for MacDonald Thresher Co., Stratford, Ont.

20285. Sept. 3.—Authorizing Quebec, Montreal and Southern Ry. to use bridge over St. Francois River, between St. Francois du Lac and Pierreville, Que.; speed of trains to be limited to 5 miles an hour.

20286. Sept. 4.—Authorizing Quebec, Montreal and Southern Ry. to build branch across St. Thomas St., Longueuil, Que., for D. Brisette & Co.

20287. Sept. 3.—Authorizing C.P.R. to build spur and two sub spurs for Dwyer Elevator Co., Fort William, Ont.

20288. Sept. 8.—Authorizing G.T.R. to build siding from its Ashbridge's Bay spur, east of Cherry St., Toronto, along and across what is known as the 150 foot roadway and across Keating's Channel, for 135 ft.; thence for 2,415 ft. in Toronto Harbor Industrial District.

20289, 20290. Sept. 5.—Authorizing C. N. Western Ry. to build across C.P.R. in Sec. 18-13-6, w. 4 m. and across C.P.R. spur at Redcliffe, Alta.

20291. Sept. 8.—Authorizing C.P.R. to build highway crossing opposite Ninth Ave., Blairmore, Alta.; and rescinding order 18368, authorizing it to open up original road allowance known as Twelfth St., across its tracks.

20292. Sept. 8.—Authorizing Quebec, Montreal and Southern Ry. to build, subject to consent of Montreal South Village, spur for Lapointe and Mailloux.

20293. Aug. 18.—Approving revised location Edmonton, Dunvegan & British Columbia Ry. from mileage 120.7 to 122.88, through Tp. 70, R. 1, w. 5 m., Alta.

20294. Sept. 8.—Approving location of Alberta Central Ry. from mileage 10 to 20, Red Deer to Sounding Creek; and authorizing crossing of 11 highways.

20295. Sept. 8.—Amending order 19532, June 9, re express delivery and collection limits in Steelton, Sault Ste. Marie, Ont.

20296. Sept. 2.—Ordering Canadian Northern Ry. to build standard portable station and loading platform at Eriksdale, Man.; work to be completed within 30 days.

20297. Sept. 6.—Authorizing C.P.R. to build spur and two sub spurs for Manitoba Rolling Mills Co., St. Clements Parish, Man.

20298. Sept. 9.—Extending, for three months from date, time within which G.T.R. shall complete branch for Dominion Canners, Ltd., Simcoe, Ont.

20299. Sept. 9.—Extending, to Sept. 30, time within which C.P.R. and G.T.R. shall install electric bells at crossing of Perth Road, one mile north of Kingston, Ont.

20300. Sept. 9.—Extending, to Nov. 30, time within which C.P.R. shall complete spur for T. Jackson & Son, Winnipeg, as authorized by order 19450.

20301. Sept. 10.—Authorizing C.P.R. to build bridge 24.20 over Crazy Creek, Shuswap Subdivision, B.C.

20302, 20303. Sept. 9.—Authorizing C.P.R. to build additional track, at grade, across highway between Sec. 4-18 and Sec. 33-17-6, at mileage 59.69; and across highway between Secs. 16 and 17-17-9, w. 3 m., at mileage 80.97, Swift Current Subdivision, Sask.

20304. Sept. 9.—Amending order 19842, July 19, re Campbellford, Lake Ontario and Western Ry. spur across C. N. Ontario Ry. at mileage 122.02 from Glen Tay.

20305, 20306. Sept. 10.—Authorizing C.N. Ontario Ry. to build bridges across Petawawa River, middle crossing, mileage 150.15 from Ottawa, Montreal-Port Arthur Line; and across Petawawa River, east crossing, mileage 142.5 from Ottawa, Ottawa-Capreol Line.

20307, 20308. Sept. 11, 9.—Authorizing Campbellford, Lake Ontario and Western Ry. to swing scaffolds temporarily, for 30 days, under structure carrying its line over G.T.R. at mileage 69.25 and 121.52 from Glen Tay, with a height of not less than 18 ft.

20309. Sept. 10.—Authorizing C.P.R. to open for traffic portion of its Suffield West Branch, from mileage 0 to Terrace, 26.4 miles.

20310. Sept. 9.—Authorizing C.P.R. to build spur for R. Graham & Sons Shale Products (Ltd.), near Inglewood Jct., Ont.

20311. Sept. 9.—Extending, to Jan. 1, 1914, time within which C.P.R. shall comply with requirements of general order 108, re Board's uniform rules regarding yard limits.

20312. Sept. 9.—Authorizing Quebec, Montreal and Southern Ry. to build spur for Sir W. G. Armstrong, Whitworth and Co., at Longueuil, Que.

20313. Sept. 11.—Authorizing Brantford Tp., Ont., to build Linden Ave. over Brantford and Hamilton Electric Ry.

[illegible] to build, at grade, across Lloyd Ave., Ojibway, Ont.

[illegible]

20318. Sept. 12.—Authorizing C.P.R. to terminate agreement with D. Silver, dated Dec. 1, [illegible] 26-21-20, e.p.m., Man.

20319. Sept. 12.—Authorizing C.P.R. to change [illegible] and 31, Con. 2, Scarboro Tp., and build additional [illegible]

[illegible] Ry. to build across public road between Secs. [illegible]

[illegible] Tp., to join spur to be built by Point Anne Quarries, Ltd.

20325. Sept. 11.—Approving G.T. Pacific Branch [illegible]

[illegible] wnsend Tp., Ont.

[illegible] g plant at crossing of Adelaide St.; and [illegible] g it and C.P.R. to operate cars and trains [illegible] to be flagged across by day and night [illegible] employed by C.P.R. at expense of Lon[illegible] Ry.

[illegible] Sept. 12.—Relieving G.T.R. from pro[illegible]

20329. Sept. 13.—Ordering Michigan Central Rd., T. H. & B. Ry., and C.P.R., jointly, to reduce their rate on coal, in carloads, from Suspension Bridge, Black Rock and Buffalo, N.Y., to Islington and Lambton, Ont., from 75 to 70c. a ton of 2,000 lbs., to become effective not later than Oct. 27, and re[illegible]

20330. Sept. 5.—Authorizing C.N. Alberta Ry. to [illegible]

[illegible] 325 and 16912, so as to include extra land required [illegible]

[illegible] anch Lines Co. to carry traffic over portion of [illegible] est Branch from Moosejaw, [illegible] Moosejaw Branch, to Mawer, [illegible]

20334. Sept. 16.—Ordering Canadian Northern [illegible]; work to be completed within 30 days from [illegible]

20335. Sept. 17.—Authorizing Dominion Atlantic [illegible]

[illegible] Sept. 15.—Authorizing C. N. Western Ry. [illegible]

20339. Sept. 16.—Relieving G. T. Pacific Ry. from erecting fences on its line east of Prince Rupert, to mileage 164, such relief to cease as soon as any land on either side, or in vicinity, becomes [illegible]

20340. Sept. 15.—Approving Canadian Northern [illegible]

20342. Sept. 15.—Removing speed limitation of 15 miles an hour on trains over C.P.R. Bassano to Irricana Branch, between Bassano and Standard, [illegible]

20343. Sept. 17.—Approving location of C.P.R. [illegible]

20344. Sept. 16.—Authorizing C.P.R. to divert road in Sec. 25-14-19, w. 4 m., Alta; and to build its Suffield-Blackie Branch at grade across same.

20345. Sept. 15.—Authorizing C.P.R., after diversion of Front St. is made, to close portion of road allowance within its right of way at Broadview, Sask.

20346. Sept. 17.—Extending, to Nov. 15, time within which C.P.R. shall complete spur for Canada Wire & Cable Co., Toronto, authorized under order [illegible]

20347. Sept. 16.—Approving location of Canadian Northern Ry. Grosse Isle Branch, mileage 74.47, to 80.88, Man.

20348. Sept. 17.—Ordering C.P.R., within 60 days, to install improved type of automatic electric bell at crossing of Port Burwell Road, mileage 32.7, Port Burwell Branch; 20% to be paid out of the [illegible]

[illegible] Ontario and Western Ry. (C.P.R.) to cross Prospect St., at grade; crossing to be protected by gates installed by company; to cross Albert St. by diverting and carrying it over railway; to take whatever additional land may be required for such purposes, and to cross Simcoe St. by carrying street over railway, and to divert Centre St. by extending Hall St. easterly to Simcoe St., and to close existing crossing on Centre St.; also approving location of [illegible] Ont.

20350. Sept. 17.—Approving G. T. Pacific Ry. [illegible] District, B.C.

20351. Sept. 18.—Amending order 20148, Aug. 20, re C.P.R. bridge over G. T. P. at mileage 88.6, Toronto Subdivision.

20352. Sept. 17.—Authorizing C.P.R. to open for traffic portion of second track between mileage 86.8 and 47.8, Cascade Subdivision, B.C.

20353. Sept. 18.—Amending order 19832, July 18, re Alberta Government highway crossings over G. T. Pacific Ry. Calgary Branch, at Duhamel.

20354, 20355. Sept. 17.—Authorizing G.T.R. to build sidings for Dominion Textile Co. and Grasselli Chemical Co., Montreal.

20356. Sept. 17.—Authorizing C.P.R. to build [illegible] Ogilvie Flour Mills Co., Calgary, Alta.

20357. Sept. 17.—Authorizing C.P.R. to divert road allowance in Sec. 14-16-20, w. 4 m., Alta.; and to build its Suffield-Blackie Branch at grade across [illegible]

[illegible] Ry. to build bridge over Cambridge Brook, 77.9 miles from Halifax and about 300 ft. east of Cambridge station, N.S.

20359. Sept. 17.—Authorizing C. N. Alberta Ry. to build spur for Jasper Park Collieries through [illegible]

[illegible] further protection at Tecumseth Road crossing, one mile east of Stoney Point station, Ont.

20361. Sept. 19.—Approving amended location of G.T. Pacific Ry. station at Smithers, mileage 226.5, Prince Rupert East, B.C.; and rescinding approval [illegible] under order 16278, Apr. 9, 1912.

20362. Sept. 19.—Authorizing C.P.R. to build bridges for double track at mileage 78.4 and 3.2, Moose Jaw [illegible] Rush Lake; at 92.1 over Antelope Creek, and 101.2, Swift Current Subdivision, Sask.

[illegible] Maisonneuve.

20364. Sept. 19.—Ordering Canadian Northern Ry. [illegible] stock yard, with platform and chute, at Sturgis, Sask., by Oct. 10.

20365. Sept. 20.—Authorizing C.P.R. to build spur for Canadian Concrete Products Co., Chatham, Ont.

20366. Sept. 20.—Authorizing C.P.R. to build two [illegible] Moose Jaw Subdivision; and extension of bridge at Rush Lake, mileage 73.4, [illegible]

[illegible] Prince Rupert, B.C., [illegible] 205 and mileage 301; trains limited to 25 miles an [illegible] over uncompleted bridges and temporary crossing of Bulkely River, mileage 263.

[illegible] 150.75, near Huntsville, over Big East River, Barrie Division, Ont.

20369. Sept. 22.—Extending for 30 days from date, time within which G.T.R. shall complete spurs for Pilkington Bros., Thorold Tp., Ont., authorized [illegible]

20370. Sept 20.—Approving location of C.P.R. stations at Lemsford, Abbey and Prelate, Sask.

20371. Sept. 20.—Ordering G.T.R. to employ watchman at crossing of Edinburgh St., Guelph, Ont., [illegible]

20372. Sept. 22.—Approving plan, etc., of John Beck drain, to be built under G.T.R. at mileage 20.14, South Norwich Tp., Ont.

20373. Sept. 20.—Authorizing C.P.R. to open for traffic portion of double track, from Kemnay to Griswold, mileage 8.2 to 24.8, Man.

20374. Sept. 22.—Authorizing C.P.R. to build bridges 9.3, near Red Deer, Alta., and 113.1, near West Shefford station, Que., and rescinding order 20092, authorizing building of bridge 113.1.

20375. Sept. 20.—Authorizing C.N. Quebec Ry. to build across public road in Lot 15a, R. 5, Rawdon Tp.

20376. Sept. 20.—Authorizing Canadian Northern Ry. to build bridge to carry its line across C.P.R. and Moose Jaw Creek (third crossing), at mileage 86.1, Sask.

20377. Sept. 22.—Authorizing C.P.R. to build spurs for Whitlock and Riddell, Moose Jaw, Sask., one from station grounds across North Railway Ave. and Edgell Ave., Camrose, Alta., and one each for Vernon Fruit Co. and Provincial Telephone Co., Camrose, Alta.

20379. Sept 22.—Exempting C.P.R. from complying with requirements as to publication of notice of application, and recommending to Governor in Council for sanction, agreement of Aug. 15, with the Minister of Railways and Canals.

20380. Sept. 22.—Authorizing C.P.R. to build extension to spur for Western Coal Co., St. John Parish, Winnipeg.

[illegible] Authorizing Montreal and Southern Counties Ry. to operate trains over G.T.R. crossing, 7.45 miles from Montreal, in St. Antoine de Longueuil Parish, without stopping.

20382. Sept. 23.—Authorizing C.N. Ontario Ry. to build overhead across St. Denis St. (now Albert St.), Montreal.

20383. Sept. 23.—Authorizing C.P.R. to divert road along south westerly side of right of way, from road allowance along northerly side of n.e. ¼ Sec. 35-39-23, w. 4 m., to Leon St., Alix, Alta.

20384. Sept. 19.—Amending order 20230, Aug. 30, re diversion of Fourth Depot River, Hinchinbrooke Tp., Ont., by Campbellford, Lake Ontario and Western Ry. (C.P.R.)

20385. Sept. 22.—Authorizing C.P.R. to build a switching lead northerly from Vine St., Toronto.

20386. Sept. 23.—Authorizing C.P.R. to operate [illegible] bridges, Lake Superior Division, Ont.

20387. Sept. 22.—Extending, to Nov. 30, time within which C.P.R. shall install gates at Osler Ave., North Toronto; pending installation, crossing to be protected by day and night watchmen employed by the company.

20388. Sept. 22.—Authorizing C.P.R. to build spurs for Dominion Bridge Co. on Saskatchewan Ave., Winnipeg.

20389. Sept. 22.—Authorizing C.P.R. to build road diversion in Sec. 15-18-15, w. 2 m., across its double tracks at station 877, Moose Jaw Subdivision, Sask.

20390. Sept. 24.—Authorizing C.P.R. to open for traffic portion of second track from Iberville Jct. to Iberville station, Que., mileage 18.7 to 19.2.

20391. Sept 23.—Approving clearances of C.P.R. train shed at Windsor St., Montreal.

20392. Sept. 22.—Authorizing Dominion Atlantic Ry. to build its North Mountain Branch across Burgess, Grafton and Chute Roads, between Centreville and Weston, N.S.; and rescinding authority under order 16582, May 22, 1912, in same connection.

20393. Sept. 23.—Amending order 20075, Aug. 15, re C.N. Ontario Ry. temporary crossing in Westmeath Tp.

20394. Sept. 23.—Approving plan, dated Sept. 18, showing proposed changes in Algoma Steel Corporation's power canal at Sault Ste. Marie, where it crosses C.P.R. bridge at mileage 181.49, Lake Superior Division, Ont.

20395. Sept. 24.—Authorizing Lake Erie and Northern Ry. to use, pending installation of interlocking plant required under order 19248, June 4, the crossing of Grand Valley Ry. at Station 1059.06, for construction purposes only; trains and cars to be flagged over crossing by signalman provided by L.E. & N.R.

20396. Sept. 24.—Authorizing C.P.R. to open for traffic portion of its Estevan Northwest Branch from Estevan to Neptune, mileage 0 to 54, speed of trains limited to 20 miles an hour.

20397. Sept. 22.—Ordering C.P.R. to cause its western officials to issue a circular to employes, similar to circular 34, issued by its eastern officials applying to Eastern Lines.

20398. Sept. 24.—Authorizing C.P.R. to open for traffic portion of its double track between Roberts and Ramsay, Ont., mileage 60 to 70.9, Chapleau Subdivision.

20399. Sept 24.—Authorizing Algoma Central and Hudson Bay Ry. to use overhead bridge between Cathcart St. and Wilde Ave., Tagona, Ont.

20400. Sept. 23.—Approving revised location G.T. Pacific Ry. through Lot 2012-A, mileage 360, east of Prince Rupert, R. 5, Coast District, B.C.

20401. Sept. 23.—Authorizing G.T.R. to use subway carrying Coxwell Ave., Toronto, underneath its tracks.

20402. Sept. 24.—Authorizing Saskatchewan Board of Highway Commissioners to build highway over G.T. Pacific Ry. in n.e. ¼ Sec. 18-14-18, w. 2 m.

20403. Sept. 24.—Authorizing C.P.R. to build spur for J. B. Tudhope and R. A. Carman, and change location of International Harvester Co.'s spur, Regina, Sask.

20404. Sept. 24.—Approving location of C.P.R. stations at Strathmead and Strangmuir, Alta.

20405. Sept. 24.—Approving Campbellford, Lake Ontario and Western Ry. (C.P.R.) plan showing general layout and masonry details of bridge 87.14 over Sidney St., Trenton, Ont.

20406. Sept. 24.—Authorizing Canadian Northern Ry. to build branch line to gravel deposit near Findlater, Sask., and to cross surveyed road between stations 21.66 and 22.33.

20407. Sept. 23.—Ordering Kettle Valley Ry. to build two farm crossings where it crosses M. W Smith's farm, Beaverdell, B.C.

20408. Sept. 24.—Authorizing Ottawa and New York Ry. and St. Lawrence and Adirondack Ry. to use on their locomotives wire mesh netting with openings 3-10 in. by ¾ in., made of wire not less than 0.135 in. diar., in lieu of requirements as to wire mesh netting in general order 107.

20409. Sept. 24.—Authorizing C.P.R. to take certain lands for completing diversion of Nine Mile Road, South Gower Tp., Ont., as provided by orders 18958 and 20267, Apr. 1 and Sept. 4.

20410. Sept. 25.—Authorizing C.P.R. to build passing track across road allowance between s.w. ¼ Sec. 27 and s.e. ¼ Sec. 28-16-25, w. 2 m., Sask.

20411. Sept. 23.—Ordering that within 90 days from date Campbellford, Lake Ontario and Western Ry. (C.P.R.) and G.T.R. each install improved type of automatic electric bell at crossing of road allowance between Lots 16 and 17, Con. A, Haldimand Tp.

20412. Sept. 25.—Relieving C.P.R. from providing further protection at crossing of highway at Moffatt station, Nassagaweya Tp., Ont.

20413. Sept. 24.—Amending order 18761, Feb. 20, re Campbellford, Lake Ontario and Western Ry. (C.P.R.) subway in Scarboro Tp., at mileage 180.56 from Glen Tay, Ont.; and amending order 19381 re C.N. Ontario Ry. subway and road diversion at the same point

20414. Sept. 25.—Establishing Dominion Ex. Co.'s delivery limits in Bassano, Alta

20415. Sept. 24.—Rescinding order 20246, Aug 30, suspending for 30 days effective date of advanced rates in Supplement 24 to Tariff C.R.C. W-1713, filed by C.P.R.

20416. Sept. 25.—Authorizing Algoma Central and Hudson Bay Ry. to open for traffic its main line from Franz to Oba, Ont., mileage 30.08 to 81.

20417. Sept. 25.—Authorizing Algoma Eastern Ry. to open for traffic its main line from West River to Goat Island, Ont., mileage 60.76 to 80.49

20418. Sept. 25.—Authorizing Canadian Northern Ry. to build across 7 highways on its Alsask Southeasterly Line, Sask.

20419. Sept. 25.—Approving proposed revision of grade on C.N. Ontario Ry. Montreal-Hawkesbury line from mileage 46.69 to 48.62 from Hawkesbury, Cartierville Tp., Que.

20420. Sept. 25.—Authorizing G.T.R. to build siding across Wellington St., Berlin, Ont.

20421. Sept. 25.—Authorizing G.T. Pacific Branch Lines Co. to build spur for International Harvester Co., Yorkton, Sask.

20422. Sept. 25.—Approving amended location of G.T. Pacific Ry. station at McBride, B.C., and rescinding approval under order 19643, June 16.

20423. Sept. 25.—Authorizing City of Ottawa to build sewer across C.P.R. lands under its tracks. work to be done under supervision of an inspector or engineer appointed by the company, city to indemnify company against any loss or damage by reason of the construction.

20424. Sept. 25.—Approving M.C.R. plan showing bridge 27.74 to be built over Alexander drain, between Comber and Ruscomb, Ont.

20425. Sept. 25.—Approving location of C.P.R. station at Schepler, mileage 51.4, on Port McNicoll Subdivision, Ont.

20426. Sept. 25.—Authorizing G.T.R. to build siding for S. L. Lambert, Welland, Ont.

20427. Sept. 26.—Authorizing C.P.R. to build Y at Balgonie, Sask., across highway adjoining its right of way.

20428. Sept. 18.—Authorizing City of Toronto to rebuild Gerrard St. bridge over C.P.R., G.T.R., C. N. Ontario Ry., and Toronto industrial siding.

20429. Sept. 24.—Authorizing Bell Telephone Co. to erect poles and wires along De Biencourt St., Montreal, from Boulevard Monk to Raxilly St.

20430. Sept. 27.—Approving Campbellford, Lake Ontario and Western Ry. (C.P.R.) revised location at Cobourg, Ont., until Nov., to enable it to remove Crossen Car Co.'s sheds, after which the revision be abandoned and it revert to location approved Apr. 14; authorizing it to cross G.T.R.'s Y; same to be protected by a watchman, and ordering it to submit new plans for approval, showing land required to be taken from G.T.R.

20431. Sept. 26.—Approving revised location of G. T. Pacific Branch Lines Co.'s Brandon Branch, mileage 0 to 0.46, Brandon District, Man.; authorizing building of same across Government road allowance between Secs. 4 and 5-12-15, and authorizing the building of a junction between same and G. T. Pacific Ry. main line.

20432. Sept. 26.—Authorizing G. T. Pacific Branch Lines Co. to carry traffic over its Tofield-Calgary Branch from mileage 197.7 to 20.15 (Calgary), crossing of highway at mileage 197.8 to be protected by electric bell, and pending installation all trains in either direction be stopped 75 ft. from crossing and proceed over crossing under control, prepared to stop at any moment; that temporary station or platform be provided at Calgary, and speed of trains be limited to 10 miles an hour through thickly settled portions within city limits.

20433. Sept. 26.—Authorizing G.T.R. to build sidings for Otis-Fensom Elevator Co., Hamilton, Ont.

20434. Sept. 26.—Authorizing C. N. Ontario Ry. to build across public road in Lot 7, Con. A, Etobicoke Tp., said public road to be connected with Islington Ave., north of C.N.O.R. tracks.

20435. Sept. 26.—Approving location of Moncton and Northumberland Strait Ry. from Richibucto to Buctouche, N.B., 19 miles.

20436. Sept. 27.—Authorizing C.P.R. to build its Forsyth St. Branch across Montreal Tramways Co. on Davidson St.; provided M. T. Co. change location of tracks at crossing, to provide safe clearance between sides of cars and vertical support of overhead structure; cost to be paid by C.P.R.

20437. Sept. 23.—Authorizing City of Toronto to build viaduct carrying Bloor St. across C.P.R., C. N. Ontario Ry., and G.T.R., to connect with Danforth Ave., east of Don River, subject to conditions that piers shown on plans be moved 45 ft. to the east, and providing there be room between river and pier D to enable C.N.O.R. to place tracks.

20438. Sept. 24.—Extending express collection and delivery area in Walkerville, Ont., as prescribed by order 19534, June 9.

20439. Sept. 26.—Authorizing Montreal and Southern Counties Ry. to operate its trains and cars over Central Vermont Ry. between Richelieu and Marieville, Que., and to use C.V.R. stations, yards and other facilities.

20440. Sept. 27.—Authorizing C.P.R. to build bridge 75.6, Havelock Subdivision, Ont.

20441. Sept. 27.—Approving, temporarily, G. T. Pacific Ry. Standard Freight Mileage Tariff C.R.C. 19, incorporating and superseding C.R.C. 17 by extension of mileage, to apply between stations in British Columbia, Prince Rupert to Siding 9, mileage 301, inc., pending judgment in inquiry into rates charged generally in B.C.

20442. Sept. 26.—Approving location of C.P.R. station at Regent, Man.

20443. Sept. 30.—Extending to Apr. 30, 1914, time within which C.P.R. shall complete branch lines for P. Burns & Co., Calgary, Alta., authorized under order 19761, July 5.

20444. Sept. 30.—Approving location of C.P.R. station at Foremost, Alta.

20445. Sept. 29.—Ordering C.P.R. to fence its right of way from mileage 91.3 to 91.8, north of Rutter Station, Ont., on both sides of track; and from mileage 89.8 to 89.3, south of Rutter Station, on west side of track only.

20446. Sept. 30.—Authorizing C.P.R. to build diversion of road allowance in Sec. 7-22-25, w. 4 m., Alta., and authorizing it to build at grade its Gleichen-Shepard Branch across same at mileage 19, and to close portion of road allowance within its right of way.

20447. Sept. 30.—Authorizing C.P.R. to open for traffic portion of its Swift Current Northwest Branch from Cabri to Westerham, Sask., mileage 34.8 to 94, and relieving it of speed limitation of 15 miles an hour between mileage 34.8 and 33.0, imposed under order 16869, June 25.

20448. Sept. 29.—Authorizing Lachine, Jacques Cartier and Maisonneuve Ry. to take certain lands in Montreal required for diversion of Harbor St., lands being required to give effect to order 16181, Mar. 28, 1912, authorizing crossing of certain streets, including diversion of Harbor St.

20449. Sept. 29.—Ordering that crossing of Wallace Ave., Toronto, by G.T.R., be protected by gates operated by day and night watchmen appointed by company; cost of installing and maintenance to be paid by city; work to be completed within 60 days from date, and rescinding order 9247, Jan. 12, 1910, upon installation of gates.

20450. Sept. 26.—Authorizing G.T.R. to build siding and spur for Ogilvie Flour Mills Co., west of Mill St., Montreal.

20451. Sept. 27.—Authorizing G.T.R. to build siding from west of Gore St., Stratford, Ont., easterly across Gore St., to be completed within three months from date.

20452. Sept. 29.—Extending for three months from date time within which G.T.R. shall build branch lines in Port Colborne, Ont., authorized by order 19535, June 4.

20453. Sept. 29.—Authorizing C. N. Ontario Ry. to build temporary grade on its Montreal-Hawkesbury line from mileage 46.69 to 48.62, for construction purposes only for one year, and to cross the Monkland Boulevard, Bois Franc Road, Montreal Park and Island Ry., and St. Laurent Road

20454. Sept. 30.—Authorizing Canadian Northern Ry to build across 22 highways on its Grosse Isle Branch, Man.

20455, 20456. Sept. 30.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to build at grade across side road in Lot 14, Con. 13, Bathurst Tp., Ont.; to build temporary diversion at mileage 2.1, and to build ballast pit spur line at grade across road allowance between Lots 10 and 11, Con. 1, Murray Tp., Ont.

20457. Sept. 30.—Approving consolidation of C.P.R. Standard Passenger Tariffs C.R.C. W. 38 and E. 664, providing maximum passenger tolls of 3c. a mile on its lines east of and including line between Macleod, Calgary and Edmonton, Alta., and 4c. a mile west of and including Macleod and Calgary, Alta.

20458. Sept. 30.—Ordering C. N. Ontario Ry. to build farm crossing and cattle pass for W. and R. Wilson, in Lot 26, Con. B, Westmeath Tp.

20459. Sept. 11.—Authorizing C.P.R. to build spur for Northern Elevator Co., Winnipeg.

20460. Sept. 30.—Authorizing G. T. Pacific Ry. to build Y at mileage 29 west of Yellowhead Pass, Cariboo District, B.C.; and rescinding order 17618, Sept. 25, 1912, in same connection.

20461. Sept. 30.—Extending for 30 days from date time within which G.T.R. shall complete culvert under its tracks in Tecumseh Tp., Ont., authorized by order 19988, Aug. 5.

20462. Oct. 2.—Confirming Alberta Ry. and Irrigation Co.'s joint tariff C.R.C. 165, and disallowing C.P.R. supplement 16 thereto. This order is given in full on another page.

20463. Sept. 30.—Establishing Dominion Ex. Co. collection and delivery limits in Swift Current, Sask.

20464. Oct. 1.—Authorizing Edmonton, Dunvegan and British Columbia Ry. to build across two highways in Alberta.

20465. Oct. 1.—Extending for 60 days from date time within which G.T.R. shall install electric bell at crossing of Mill St., Milverton, Ont., as required by order 19893, July 24, 1913.

20466. Oct. 11.—Authorizing G.T.R. to build siding for The Ham and Nott Co., Brantford, Ont.

20467. Sept. 30.—Authorizing G. T. Pacific Ry. to build spur for Park Lumber and Planing Mills, Ltd., Edmonton, Alta.

20468. Oct. 2.—Approving location of C.P.R. stations at Cambray and Franklin, Ont.

20469. Oct. 1.—Authorizing C.P.R. to build spur for G. F. Stephens & Co., St. Boniface, Man.

20470. Oct. 1.—Authorizing C.P.R. to build spur for Swift Current Grocery Co. and Winnipeg Paint & Glass Co., Swift Current, Sask.

20471. Oct. 1.—Approving location of C.P.R. station at Musquash, N.B.

20472. Sept. 30.—Authorizing C.P.R. to build its Weyburn-Stirling Branch across 29 highways between mileage 37.94 and 65.20, from Stirling, Alta.

20473. Oct. 1.—Authorizing C.P.R. to build sidings for McGregor and McIntyre, Toronto.

20474. Oct. 2.—Authorizing National Transcontinental Ry. Commissioners to make siding connection with C.P.R., to their shop site in Lot Cadastral 2345, St. Sauveur Parish, Que.

20475. Oct. 2.—Authorizing G.T.R. to use bridge over Richelieu River, Lacolle Jct., Que.

20476. Oct. 2.—Authorizing C. N. Ontario Ry. to build spur for J. H. Dunlop, Markham Tp.

20477. Oct. 2.—Authorizing C.P.R. to build extension to town siding, at grade, across public road between Lot 12 and 13, Con. 3, Hagar Tp., Ont.

20478. Oct. 3.—Amending order 20226, Aug. 29, re C.P.R. spur for H. J. Heinz Co., Leamington, Ont.

20479. Oct. 2.—Authorizing C.P.R. to change grade crossing, necessitated by double track, and to build at grade across road allowance at mileage 18.61, London Subdivision, Ont.

20480. Oct. 3.—Amending order 16874, June 26, 1912, re erection of fences on C.P.R. Mountain Subdivision, B.C.

20481. Oct. 2.—Ordering Canadian Northern Ry. to place caretaker at Sandy Lake, Man., by Oct. 5, to look after passengers and freight.

20482. Oct. 3.—Authorizing C. N. Ontario Ry. to build bridge across Kiosh-Koqui Lake, Pentland Tp., at mileage 186.6 from Ottawa.

20483. Oct. 3.—Ordering that $4,700, deposited in a bank in Fort William, Ont., under order 18908, Mar. 20, re C.P.R. spur at Neebing Ave., Fort William, be paid on request of C.P.R.

20484. Oct. 3.—Approving C.P.R. plans showing location of stairway from Arlington St. bridge to engine house at Winnipeg, Man., and rescinding order 16860, June 22, 1912, in same connection.

20485. Oct. 3.—Authorizing C.P.R. to build second track or siding across road allowance on east boundary of Sec. 5-9-21, w. 4 m., Alta.

20486. Oct. 3.—Relieving G.T.R. from providing further protection at second highway crossing north of Corbeyville, Ont.

20487. Oct. 4.—Authorizing C.P.R. to lay, by means of a bridge, additional track of its main line over road allowance between Secs. 21 and 22, Tp. 18, R. 13, w. 2 m., Sask.

20488. Oct. 3.—Ordering Canadian Northern Ry. to erect a third class station building at St. Gregor, Sask., to be completed by July 31, 1914.

20489. Oct. 2.—Amending order 20009, Aug. 11, re G. T. Pacific Ry. diversion of Toronto St., Moose Jaw, Sask.

20490. Oct. 4.—Authorizing C.P.R. to build spur for Manitoba Cold Storage Co., Winnipeg.

20491. Oct. 4.—Authorizing C.P.R. to use undercrossing during building of Heffernan St. bridge, Guelph, Ont., providing men keep off cars and tops of cars when using same, and approving clearances as shown on plan of false work.

20492. Oct. 4.—Authorizing City of Edmonton, Alta., to open Spadina Ave. across Canadian Northern Ry. at grade within city limits.

20493. Oct. 3.—Authorizing British Columbia Telephone Co. to erect its wires across G.N.R. on Oscar St., Abbottsford, B.C.

20494. Oct. 1.—Authorizing C. N. Ontario Ry. to build spur for Laberge & Sons, Sudbury.

20495. Oct. 4.—Authorizing C.P.R. to build, at grade, spur for Tillsonburg Electric Car Co., Tillsonburg, Ont.

20496. Oct. 4.—Approving Michigan Central Rd. plan showing bridge at mileage 32.98, carrying Little Creek Drain under railway in Tilbury West Tp., Ont.

General Order 108, Aug. 11.—Ordering C.P.R. to withdraw its special rule F applying to western lines and hereafter observe the uniform rules of the Board regarding yard limits.

General Order 109.—Suspending, until further order, mileage rates on less than carload shipments of grain and grain products.

General Order 110.—Requiring railway companies, subject to Board's jurisdiction, to accept and carry by freight, trunks containing wearing apparel and personal effects when securely corded.

General Order 111.—Dismissing application of H. W. Riley, Calgary, Alta., for reconsideration of orders 17492 and 17384, prescribing express rates on cream and terms and conditions of service in connection therewith, and substituting certain rules for those included in tariff prescribed by order 17384.

General Order 112. Sept. 18.—Amending general order 111, Aug. 20, re express rates on cream. General order 111, as amended by 112, was given in full in our last issue, pg. 477.

Model Construction Camp at Canadian Pacific Railway Rogers Pass Tunnel Site.

The model camp illustrated on this page, which Foley, Welch and Stewart are having built at Glacier, B. C., for the accommodation of their employes on the 5 mile tunnel which they are boring for the C. P. R. at Rogers Pass, will cover an area of about 2½ acres, close to the eastern portal of the tunnel. The village is divided into three sections:

No. 1 section will consist of bunk rooms for first and second class workmen, with lounge rooms, writing rooms, lavatories, etc.; and at one end a row of six bungalows for married men. Each bungalow consists of living room, dining room, kitchen, three bedrooms and bathroom. This section will be 360 by 30 ft.

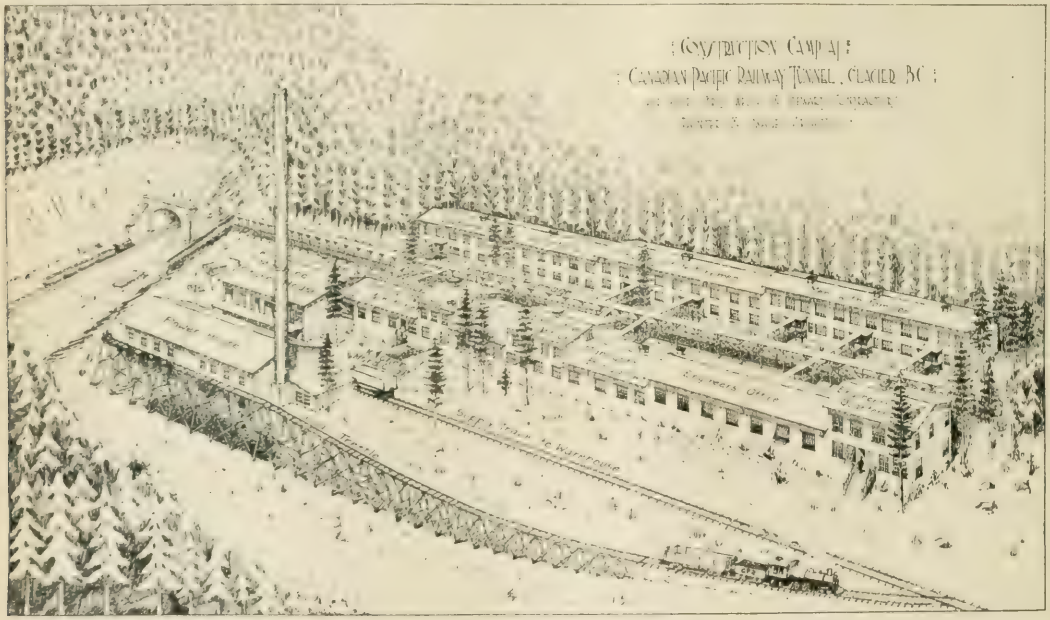
No. 2 section:—The main block will consist of general offices, with offices for Manager, Superintendent, Master Mechanic, Accountant, Paymaster and general clerk's offices. Attached to the office block will be the Manager's bungalow, and officers' dining room. The main kitchen will be in the centre of this block, with foremen's dining room on one side, and general dining room on the other. At one end of this block will be a general dry goods store, connecting off the main stores for the contractors. Above the kitchen will be arranged sleeping accommodation for the kitchen staff and over the general offices will be sleeping accommodation for the clerical staff. Ground space is being left for the accommodation of the C. P. R. engineers, attached to which will be two bungalows for married members of the staff. The whole of this main block will be 396 by 36 ft. These two sections will be placed 50 ft. apart and connected to each other by a central raised, covered walk with side walks leading off to various parts of the camp.

No. 3 section. At the rear of the main block will be the power plant, comprising boiler house containing five 150 h. p. return tubular boilers, and an engine room comprising a 3 stage compressor and generating plant. This is for supplying the air pressure required for the drilling. The camp will be also heated and lighted and supplied with hot water from this source. On one end of the boiler house will be a laundry to be fitted with modern appliances. The dimensions of this section will be about 134 by 45 ft.

The whole of the village will be built upon piles, 12 ft. centres, and the buildings will be timber-framed covered with 12 in. shiplap. The roofs will be covered with ruberoid, and will be constructed to stand the stress of 12 ft. of snow. The floors of the houses will be 8 ft. above the ground level, and will be connected with a covered in, high level walk between the two blocks, down to the right of way at the tunnel portal.

A railway siding is built to the right of way at the portal, and is connected with a coal trestle at the rear of the power house.

The village is designed for the accommodation of 300 men, and for all the necessary office work on the contract. It was designed by W. S. Painter, formerly Chief Architect, C. P. R., Montreal, and now of Painter & Swales, Architects, Vancouver, to whom we are indebted for the foregoing data.


Construction Camp at
Canadian Pacific Railway Tunnel, Glacier BC

Railway Fire Protection Association.—This association was organized at Chicago, Ill., Oct. 7 and 8, with about 40 members representing the fire protection or insurance departments of railways. The chief object is to promote the interest in, and improve the methods of, fire protection and prevention, to obtain and circulate information on these subjects, and secure the co-operation of its members in establishing proper safeguards against loss of property and life by fire, and to standardize practices through the interchange of ideas and experiences with regard to such matters in connection with railway properties. The Secretary-Treasurer is C. B. Edwards, Fire Insurance Agent, Mobile and Ohio Rd., Mobile, Ala.

Railway Finance, Meetings, Etc.

Kettle Valley Lines.—Application is being made to the Board of Railway Commissioners for the sanction of an agreement, dated June 2, made between the K.V. Ry. and the C.P.R. for an interchange of traffic between the lines of the two companies.

Temiscouata Ry.—At the annual meeting at Quebec, Sept. 30, the report showed a considerable increase in gross and net earnings for the year ended June 30. All the fixed charges, covering interest on prior lien bonds, and sinking fund, were met, and a slightly increased interest payment made on the consolidated mortgage income bonds. Following are the officers and directors for the current year:—President, J. H. Walsh; Vice President, E. O. Grundy; Secretary and General Manager, G. G. Grundy; other directors, A. H. Cook, F. Murphy, A. Laurie and W. N. Campbell.

Timiskaming and Northern Ontario Ry.—The act passed last session of the Dominion Parliament, granting a cash subsidy not exceeding $6,400 a mile for 333.45 miles of main line and branch lines, was brought into effect by proclamation, Oct. 16.

Victoria Terminal Ry. and Ferry Co., Victoria and Sidney Ry.—The annual meetings were held at Victoria, B. C., Oct. 8. Following are the officers and directors for the current year:—President, A. H. MacNeill; Vice President, L. C. Gilman; Secretary-Treasurer, A. M. Thomas; other directors, F. Van Sant and F. V. Brown.

Records of a number of similar locomotives showed that for every 0.01 in. wear of the driving wheel axles, the mileage of those made of vanadium steel was 39,145, as compared to 17,019 for those of carbon steel.

A case is on record of a locomotive that under the standard boiler horse power rating would develop 400 h. p., which has developed as high as 1994 h. p., or 398% in excess of its rating.

Canadian Pacific Railway Company's Annual Meeting.

The annual meeting was held at Montreal Oct. 1. In moving the adoption of the report for the year ended June 30, which was published in detail in Canadian Railway and Marine World for September, the President, Sir Thomas Shaughnessy, said:—

With the active business conditions that prevailed throughout the year, your gross earnings reached the high water mark of nearly $140,000,000, but since the turn of the year there has been a decrease, due to the falling off in the movement of westbound traffic, as well as in the building and other trades throughout Canada. However, thus far in the year your gross revenue is larger than it was in 1911, and, with the renewed confidence and courage that will develop everywhere as the result of the bountiful crops and the general improvement in the money market that begins to make itself manifest, there is every reason to anticipate another satisfactory year.

Your issue of additional capital stock early in the year, while it bore rather severely on shareholders who had to find money to meet their calls during the period of stringency that prevailed in Europe and elsewhere, was of great advantage to you, because it enabled you to proceed with important works essential to the future welfare of your property, and it was a distinct boon to the country, providing as it did wages for thousands who would otherwise have been unemployed, and furnishing circulation in a large way when it was most useful.

The constant demand for additional railway mileage, the recurring necessity for providing second tracks, larger stations, shops, yards and more cars and locomotives, to cope with your enormous traffic, involve expenditures that are almost startling, but we cannot afford to stop. In ten years the annual gross income has grown from $43,000,000 to $139,000,000, and if Canada is to meet our expectations in point of population and prosperity, as beyond doubt it will, there should be proportionate increase during the next ten years, provided that we have the roadbed, equipment and facilities to handle the traffic as against all comers. This does not mean that the expenditures for these purposes during the next few years need be anything approaching those of the past, because, when the lines now being built are completed, our construction programme may be substantially modified, and, with the exception of important improvements at one or two points in Eastern Canada where congestion during the busy season is annoying as well as expensive, and the completion of a second track on portions of the main line, we will, by the end of this season, be well ahead of our requirements.

This year the company's bond, debenture and share capital, including the recent issue of $60,000,000, is $283,000,000 more than it was in 1903. Of this, $124,000,000 was expended in the construction and acquisition of additional mileage and the purchase of ocean, lake and river steamships; and the additions to car and locomotive equipment absorbed $101,000,000. The balance of $58,000,000 was used for the general improvement of your property, but this amount was supplemented by premiums on stock issues and appropriations from surplus earnings to the amount of $105,000,000, nearly all of which will have been expended by the end of the current year, so that you will have invested in your property in those ten or eleven years this large sum of $105,000,000 that will represent no capital liability and will consequently make no draught upon your revenue. Only a very small portion of the earnings of your Atlantic and Pacific steamship lines were, during the past few years, included in your net revenue, having been transferred instead to the steamship replacement fund. As this fund now approximates the entire cost of your original Atlantic fleet, it is neither necessary nor desirable to increase it by liberal appropriations hereafter. Your Atlantic fleet has, in recent years, been supplemented by the acquisition of 18 steamships with a gross tonnage of 146,361. The earnings of these steamships have been utilized in reducing their cost, which now stands at about $2,750,000, included temporarily in advances and investments pending a determination of policy. The Transpacific steamships, while useful as contributors of traffic to your railway system, have never been particularly profitable, and, indeed, the Atlantic Ocean traffic varies considerably from year to year in volume and value, but I think that we may, with safety, anticipate an annual net revenue of $2,000,000 from the Transatlantic and Transpacific steamship lines after making due provision for interest on their cost and for depreciation. The formation of a steamship company to acquire the vessels whose cost has not been capitalized, to charter or lease those purchased with the proceeds of securities, and to provide means for the construction or purchase from time to time of additional vessels of a suitable type to maintain the character of the fleet and to strengthen its earning power, is receiving some consideration.

Most of the company's hotels are yielding a fair return, but some of them provided as necessary accessories to tourist traffic during the summer are operated at a loss. However, on the whole your hotel system is reasonably profitable, and hereafter the net profits, which have been used in the past for additions and improvements, will be treated as special income.

Legacies that came to you with acquired lines, the utilization of coal lands, and other circumstances have involved you in a number of enterprises that do not ordinarily come within the province of a railway company. There are mining, smelting and water power interests, of considerable values as compared with what they cost, from which revenue in the current year will be approximately $250,000; coal mines at Bankhead, Hosmer and Lethbridge, from which you received in the year upwards of $300,000, and lumber mill at Bull River, B.C., where ties and timber are manufactured for the company's use, a doubtful commercial enterprise excepting in so far as it serves to keep prices within reasonable bounds.

Railway companies in the United States are required to segregate their railway earnings proper and their income from other sources, and, while there is as yet no similar legal requirement in Canada, we have, as you know, recently made such a change in our system of accounting as to practically conform to the practice of other railway companies, but we still include in the earnings of the railway the returns from commercial telegraph system and our Pacific Coast steamships. In the next annual report the revenue from these sources will be treated as special income, and, of course, there will be a corresponding reduction in the gross and net earnings of the railway.

To prevent large areas of your land from being purchased and held for speculative purposes, regulations were adopted last autumn limiting sales to actual settlers, and, in order that it may be as easy as possible for settlers to purchase and develop lands, only one-twentieth of the purchase price is required to be paid down, and the balance is spread over 20 years with interest at 6%. This policy should have the effect of bringing your lands under cultivation with increased rapidity, and, while the cash installments will be less than heretofore, the deferred payments carrying interest will yield a larger income.

Your ownership of 6,287,250 acres of land in Manitoba, Saskatchewan and Alberta is mentioned in a footnote to the balance sheet, but it plays no part in your accounts, excepting when the lands are sold. With established conditions in Western Canada and the experience of the last few years there would appear to be no difficulty about determining, with a fair degree of accuracy, the present value of this asset. Of course, as the lands are disposed of and the country becomes more thickly populated the market value of the remaining areas will naturally tend upward, but, in order to be quite on the safe side, let us adopt a figure that is somewhat below the average of the last few years, namely, $14 an acre. On this basis your unsold lands are worth $88,021,500, but you have spent a large sum on irrigation works in the Calgary district, with the result that 500,000 acres of the irrigable land should bring an average of $25 an acre above the price mentioned, or $12,500,000 additional. The unsold Esquimalt and Nanaima lands on Vancouver Island, and your residuary interest in other lands acquired with railway lines constituting a portion of your system, will realize at least $7,000,000. Then you have over 600 townsites, including Vancouver, appraised by the officers of the Land Department at $21,500,000. The present estimated market value of these lands and townsites still belonging to the company is, therefore, $129,021,500.

Your directors have been considering the desirability of conveying these lands, townsites and other interests to a company in exchange for all its capital stock, to be held in your treasury and taken into the balance sheet with your other assets, but a conveyance of that description has its disadvantages, particularly with reference to the lands, and it is probable that the same end may be accomplished by the creation of an investment fund to be administered by trustees or by officers of the company specially designated. In any event your directors will endeavor, before the next annual report is published, to devise some plan for reconstructing the special income account and showing your extraneous assets in more definite and tangible form. Meantime, while the present policy in dealing with your land sales will remain unchanged and the proceeds will be conserved as heretofore, it is felt that the cash proceeds of sales in your townsites, which, last year, amounted to $1,409,747.44, may, with propriety, be taken into special income, to be dealt with as the directors deem best.

The report was unanimously adopted.

It was resolved, that the construction and equipment of the following branch lines and extensions of other branch lines which have been authorized be approved:—

A branch from Gleichen to Shepard, Alta., 40 miles;

A branch from Bassano easterly, Alta., 118 miles;

A branch from Snowflake, Man., westerly, 9 miles;

An extension northerly of the Selkirk Branch, Man., 26 miles;

An extension westerly of the Weyburn-Lethbridge Branch, 240 miles.

An extension northwesterly of the Suffield Southwesterly Branch, 27 miles;

An extension northwesterly of the Swift Current Northwesterly Branch, Sask., 175 miles,

and for the purpose of aiding the construction and equipment of the said branch lines and extensions of branch lines, the directors may, from time to time, as may be necessary, and in accordance with the statutory provisions in that behalf, issue and dispose of consolidated debenture stock of the company to such amount as they may deem expedient, not exceeding in the aggregate an amount equal to £6,000 a mile in respect of the Gleichen-Shepard Branch, Bassano Branch, Suffield Southwesterly Branch extension and Swift Current Northwesterly Branch extension, £5,000 a mile in respect of the Weyburn-Lethbridge Branch extension, £4,000 a mile in respect of the Snowflake Branch, and £3,000 a mile in respect of the Selkirk Branch extension.

Resolutions were also adopted authorizing the issue of £1,000,000 consolidated debenture stock at 4%, to pay for the two intermediate class passenger steamships for the Atlantic Service, and two turbine passenger steamships for the British Columbia Coast Service, at present under construction in Scotland; and amending bylaws 40, 44 and 45 relating to stock certificates and transfer books.

The retiring directors, D. McNicoll, C. R. Hosmer, Hon. Robert Mackay and Jas. Dunsmuir were re-elected.

At a subsequent meeting of the board, Sir Thos. Shaughnessy and D. McNicoll were re-elected President and Vice President, respectively, and the following were appointed as the executive committee:—R. B. Angus, D. McNicoll, Sir Edmund Osler, Sir Thos. Shaughnessy, Lord Strathcona and Mount Royal, and Sir William Van Horne.

The Railway Companies and Outward Cartage Charges.

Considerable information on this subject was given in Canadian Railway and Marine World for October. The action of railways operating west of Port Arthur in giving notice that the practice of advancing cartage charges on outward shipments and collecting the same from consignees at destination would be discontinued Oct. 1, having been brought before the Board of Railway Commissioners, Commissioner S. J. McLean gave the following judgment Sept. 25:—

Under date of Aug. 5, the railways in Western Canada issued a notice that, effective Oct. 1, the practice of advancing cartage charges on outward shipments and the collection of same from consignees at destination would be discontinued. The position of the railways in the matter may be taken as set out in the following statement from the Canadian Northern:—"For many years the Canadian Pacific, Canadian Northern, and Grand Trunk Pacific included in their Winnipeg tariff the cost of cartage. This practice was discontinued on May 15, 1913, but during the period when Winnipeg was eliminated from tariffs, including the cost of cartage, important jobbing interests developed in such cities as Regina, Calgary, Saskatoon and Edmonton, and under arrangement with the draymen performing the service in these cities, the cost of cartage on outward business was added to the freight bill and collected from consignee. With the abrogation of cartage in Eastern Canada, Oct. 1, the action was taken to harmonize the practice throughout Canada. Following the discussion respecting the abrogation of cartage in Eastern Canada, the Retail Merchants' Association of Prince Albert appealed to the Board against paying the cost of cartage on shipments received from Winnipeg, Saskatoon, Regina, and other points where this arrangement was in force, and as the Board intimated to them that this practice was irregular we abandoned same."

Various protests against the terms of this notice were subsequently received from the jobbing interests concerned. On the other hand, a strong protest against the continuance of the arrangement was made in a telegram from H. L. Montgomery, of Deloraine, Man., setting out the existing arrangements as unjust to the country merchant, and that the jobbers should "meet the country merchants in the open by adding the cartage to their invoices."

The proposed change comes at an awkward time so far as business is concerned. It is not only a busy season because of the laying in of fall stocks by the consignees; it is also a time when the traffic handled by lake and rail is being rushed forward for Western dealers. It is further represented to the Board that the existing cartage arrangements are dependent upon the arrangement as to advance charges which has been entered into by the railways. The railways state that as a matter of business practice, they cannot agree to look after the advance charges and collection business of every individual drayman, since it would lead to their books being cumbered with a multiplicity of accounts. This plea, from the standpoint of business practice is, however, aside from the question of the legal right of the railways so to act.

The Board has already made clear its position as to the legal status of the matter. It desires that the proper arrangement should take place, and as soon as possible. But in desiring that the proper arrangement should take place as promptly as possible, it at the same time recognizes that, in view of the custom which has in this respect developed, it is in the interest of all concerned that the change should be made with a minimum of dislocation of business in respect of cartage to and from the railway. When the protests against the disturbance of the existing arrangement were received, there were at the time negotiations pending in Eastern Canada regarding the cartage service, cancellation notices in regard to which had been filed, effective Oct. 1. Bearing in mind the tiding over the transition period, the Board suggested to the railways that the existing arrangements as to advance charges and collection in Western Canada might be continued until Jan. 1, 1914.

It has been represented to the Board that the shippers will, at the earliest possible moment, take up with the railways and the cartage companies the question of working out some system which will obviate the present objectionable features. It has not the power, nor is it attempting to exercise power, to change or modify in any way the rights and obligations of the parties to the shipping contract. The question as to whether the consignees should or should not pay advanced cartage to the railway is one entirely of contract between the parties. The Board has nothing to do with it, nor is the work done by the railways in any manner a railway service or facility within the meaning of the Railway Act. Changes of long standing practices always involve more or less inconvenience, dislocation of business, and delay. Oct. 1 is about as bad a time for the proposed cancellation as could well be selected. Under these circumstances, the Board will make no order in this matter until after Jan. 1, 1914.

Dominion Railway Subsidy Contract.—The Dominion Government has entered into a contract with the C. P. R., under the act granting aid in the construction of railways, for the construction of a line from Gimli, Man., to the Icelandic River, at or near Riverton, 30 miles.

The towers for the wireless telegraph station at Pas, Man., have been completed. They are 400 ft. high. The contract for the power house has been let to Boyle and Hughes.

Canadian Northern Railway Earnings, Etc.

Gross earnings, working expenses, net earnings, increases, or decreases, compared with those for 1912-13, from July 1, 1913:—

	Gross Earnings	Expenses	Net Earnings	Increase
July	$1,928,800	$1,414,500	$514,300	$19,700
Aug	1,824,800	1,416,200	408,600	37,800
Sept	1,994,900	1,470,000	524,900	101,400
	$5,748,500	$4,300,700	$1,447,800	$158,900
Incr	$ 501,500	$ 342,600	$ 158,900	

The mileage under operation in Sept. was 4,520, against 4,297 in Sept., 1912.

Canadian Pacific Railway Earnings, Etc.

Gross earnings, working expenses, net earnings, increases, or decreases, compared with those for 1912-13, from July 1, 1913:

	Gross Earnings	Expenses	Net Earnings	Decrease
July	$11,993,062.27	$7,876,269.09	$4,116,793.18	$331,383.72
Aug.	11,434,459.88	7,473,320.64	3,961,139.24	756,786.42
	$23,427,522.15	$15,349,589.73	$8,077,932.42	$1,088,170.14
Incr.		$ 211,577.84	. . . . . .	. . . . . .
Decr	$ 876,592.30		$1,088,170.14	. . . .

Approximate earnings for Sept., $11,887,000, against $11,322,000 for Sept., 1912.

Grand Trunk Railway Earnings, Etc.

The following figures show the earnings and expenses of the G.T.R., C.A.R., G.T. Western Ry. and D.G.H. & M.R. for August:—

Grand Trunk Railway.

Earnings	$4,090,000
Expenses	2,796,100
Net earnings	$1,293,900

Canada Atlantic Railway.

Earnings	$219,000
Expenses	241,200
Deficit	$22,200

Grand Trunk Western Railway.

Earnings	$630,900
Expenses	557,500
Net earnings	$73,400

Detroit, Grand Haven and Milwaukee Ry.

Earnings	$214,200
Expenses	208,000
Net earnings	$6,200

TRAFFIC RECEIPTS OF THE SYSTEM

Aggregate from July 1 to Sept 30:

	1913	1912	Increase
G.T.R.	$11,890,207	$11,359,777	$530,430
C.A.R.	659,164	620,311	38,853
G.T.W.R.	1,877,477	1,781,962	95,515
D.G.H. & M.R.	641,428	615,359	26,069
Totals	$15,077,276	$14,377,409	$690,867

Grand Trunk Pacific Railway Earnings.

Approximate earnings for Sept., $4,870,641, against $4,750,282 for Sept., 1912.

The earnings of the Prairie Section and Lake Superior Branch for September were $756,770, and from July 1 to Sept. 30, $1,738,371.

Western Kootenay Light and Power Co.—C. R. Hosmer, a director of the C. P. R., has been elected President of the W. K. L. and P. Co., succeeding the late W. M. Doult. The other directors are W. R. Baker, F. Paul, E. Hanson, F. F. Benson and J. S. C. Fraser. This company is developing power in the Rossland district of British Columbia, and will supply current to the C. P. R. in connection with the electrification of the Rossland branch.

Leonard Shops, National Transcontinental Ry.—The shops which the N. T. R. is having built in St. Malo, a suburb of Quebec, and which were fully described in Canadian Railway and Marine World for September, are to be called the Leonard shops, in honor of R. W. Leonard, Chairman of the N. T. R. Commission, under whose administration they are being built. The contract for their erection has been awarded to J. Gosselin, Point Levi, Que.

Windsor Street Station and Terminal Yards, Montreal, Canadian Pacific Railway.

The remodelling and extension of the Windsor St. station, Montreal, is now nearing completion, and a portion of the new part has been in service for some months. The trackage arrangements have been completed, the layout at present in use being shown in the accompanying plan of the station and terminal. All the portion of the station and office building south of the division line shown is new. The ground floor is being used for waiting rooms, restaurant, etc., and the other floors for general and local officials' offices. In the old layout, all the portion of the property south of the division line, through the new and old parts of the station, did not belong to the railway, so that all the terminal facilities were to the north of this line. In the former arrangement, there were 6 station tracks, all projecting into the station building about 40 ft. further than in the new arrangement, the latter giving greater concourse accommodation. All the station tracks branched off from the main line just west of Aqueduct St., with none of the station tracks of a greater length than 900 ft.

In the arrangement shown in the plan, and now in use, the number of tracks has been increased from 6 to 11, and their length increased by the acquisition of the property to the south of the old tracks in the station, and the property to the north of the tracks west of Aqueduct St. The northerly of the station tracks has been straightened out to give a clear length of 1,400 ft. at the point where it strikes the main line. With one lead track leading into all the station tracks, the tracks vary from the maximum mentioned down to about 400 ft., giving a total station capacity, making due allowance for locomotive length, of 120 cars, varying in train length from 5 to 14 cars.

In increasing the size of the yard, it has been necessary to build new retaining walls on the south side of the station grounds. Osborne St., on the north side of the station, is on the crest of a hill, which drops off quite rapidly to the south, so that while the station level is that of Osborne St., on the St. Antoine side there are three stores below that level. In consequence, the southerly portion of the yard had to be reclaimed by retaining walls and filling to the lines shown in the plan.

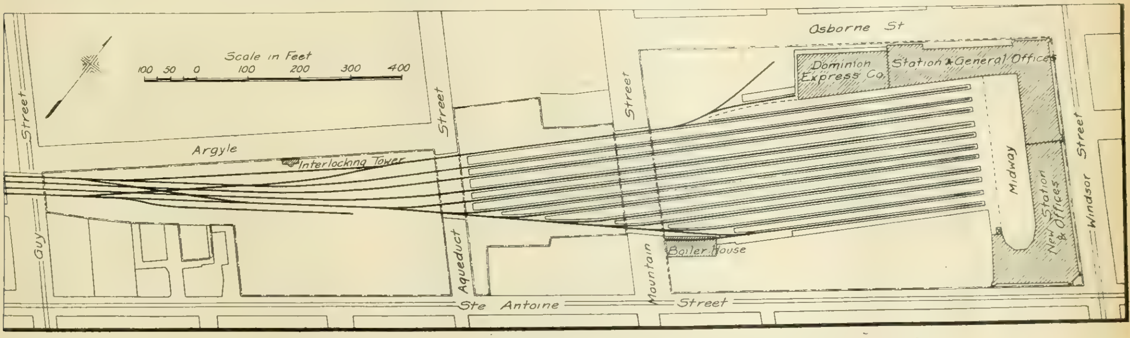
The station crosses two streets on overhead bridges. That at Aqueduct St. is a 5 span bridge, and at Mountain St. a 9 span bridge, both of steel construction, with steel floor, waterproofed deck. The elevation of the rails above the streets on the north side being considerably less than on the south, makes the bridge column heights vary.

The train shed formerly used is being removed, and the newer Bush type used instead. Over the northerly 7 tracks, it will extend to beyond Mountain St., or 1,140 ft., while the shed for the lower four tracks cuts off in pairs 950 and 810 ft. long respectively. The Bush terminal construction calls for a low shed building in spans bridging two tracks, with a longitudinal opening in the roof for the escape of the locomotive gases. This shed is supported on columns between every other track. The longitudinal opening for the escape of gases is encased in concrete, and is in consequence not subject to attack from the fumes.

The passenger platforms are 16 ft. wide, and it is along this platform that the train shed columns are placed. The intermediate platform is 10 ft. wide, and is for baggage handling, this arrangement segregating the passengers from the baggage. The platforms are of concrete, and the track ballast of crushed stone, the track being laid with 85 lb. rails.

The whole switching arrangements of the yard are to be controlled from the interlocking tower shown. The initial installation calls for 70 electrically operated switches, with accommodation for 88 when required.

We are indebted to J. M. R. Fairbairn, M. Can. Soc. C.E., Assistant Engineer, and N. E. Gutelius, Resident Engineer, for the data on which the foregoing article is based.



Plan of Canadian Pacific Railway Windsor Street Station and Terminal Trackage and Approaches, Montreal.

Prohibiting Riding on Pilots of Locomotives.

The Board of Railway Commissioners passed order 20597, Sept. 22, directing the C.P.R. to cause its Western Lines officials to issue a circular to employes similar in terms to circular 34, issued by its Eastern Lines officials and applying to Eastern Lines.

Circular 34 referred to was issued Mar. 20, 1912, by C. Murphy, then General Superintendent of Transportation, Eastern Lines, and reads as follows: "To all concerned. Accident to employes through riding on pilots of engines. The practice of riding on pilots of engines, except when switching in yards, must be discontinued, under penalty of discipline."

A. J. SHAPTER, engine tester, G. T. R., Montreal, in remitting his renewal subscription writes, "I may say that I am very pleased with Canadian Railway and Marine World."

Canadian Ticket Agents' Association's Annual Meeting.

The association's 27th annual meeting was held at the Hollenden Hotel, Cleveland Ohio, Oct. 8, 9 and 10, the members and their guests having travelled from Buffalo, N.Y., on the Cleveland and Buffalo Transit Co.'s s.s. City of Buffalo. At the opening of the meeting addresses of welcome were delivered by the mayor of Cleveland, the President of the Chamber of Commerce and the chairman of the local reception committee. R. W. Wallace, G.P.A., Erie Rd., and C. L. Kimball, A.G.P.A., Pennsylvania Lines, representing the American Association of General Passenger Ticket Agents, and the President and Secretary of the International Association of Ticket Agents, extended fraternal greetings. Among other visitors present were: W. Stitt, G.E.P.A., Canadian Pacific Ry.; W. S. Cookson, A.G.P.A., Grand Trunk Ry; M. G. Murphy, D.P.A., Canadian Pacific Ry., and a number of officials of U. S. lines were also among the visitors, and several of them spoke.

The veteran Secretary-Treasurer and one of the founders of the association, E de la Hooke, presented his annual statement showing the association to be slowly increasing in numbers and the finances to be in a satisfactory position. The President, G. J. Alexander, read an address.

Two papers were read, one by Dr. Shaw, the association's honorary physician, on precautions to be observed by travellers from the standpoint of health, and the other by P. V. G. Mitchell, Passenger Traffic Manage, White Star-Dominion Line, Montreal, on ocean steamship business. A number of questions submitted to the question box were discussed and committees were appointed to deal with some of the subjects. J. A. Mackenzie, of Woodstock, Ont., exhibited his device for filing tariffs.

The officers, etc., were unanimously reelected as follows:—President, G. J. Alexander, Richmond, Que.; 1st Vice President, J. Kidd, Goderich; 2nd Vice President, C. B. Jones, Orillia; 3rd Vice President, J. A. Mackenzie, Woodstock; Secretary-Treasurer, E. de la Hooke, London; Auditor, A. M. Hare, Tillsonburg; Honorary Counsel, J. H. Flock, London; Executive Committee, W. Jackson, Clinton; W. McIlroy, Hamilton; F. W. Churchill, Collingwood; J. P. Hanley, Kingston, and W. Fulton, London. All the officers, etc., except the President, are located in Ontario.

Among the entertainments, etc., was a smoker-concert, and a visit to a daily newspaper office for the men, a tally ho drive and theatre party for the ladies, a motor drive through the city and suburbs for the whole party, as well as a dance.

Mainly About Transportation People.

DR. G. A. KENNEDY, who died at Winnipeg, Oct. 8, was for several years a C.P.R. surgeon there.

G. CONDON, the National Steel Car Co.'s representative at Montreal, sailed from New York, Oct. 4, for Europe on a two months holiday.

Mrs. Macpherson, wife of W. MOLSON MACPHERSON, director G.T.R. and G.T. Pacific Ry., died at Quebec, Que., Oct. 7, after a prolonged illness.

A large statue of LORD MOUNT STEPHEN, the first President of the C.P.R., is to be placed in the waiting room of the Windsor St. Station, Montreal.

JOHN TOWNSEND, baggage master, Michigan Central Rd., St. Thomas, Ont., who has been in the company's service for 41 years, retires under the provisions of the pension fund, Nov. 1.

Lady SHAUGHNESSY, who underwent an operation in the Royal Victoria Hospital, Montreal, a few weeks ago, returned home at the end of September, and was reported to have completely recovered.

A. D. DAVIDSON, Land Commissioner, Canadian Northern Ry., has bought the Wells property, on the escarpement facing Davenport Road, near Walmer Road, Toronto, the house on which he will replace by a modern one.

G. R. G. CONWAY, Chief Engineer, British Columbia Electric Ry., and Chairman of the Vancouver branch of the Canadian Society of Civil Engineers, delivered the opening address at the first meeting of the winter session in Vancouver, October 13.

F. C. SALTER, European Traffic Manager, G.T.R., London, Eng., with Mrs. Salter and their younger son, arrived in Canada Oct. 11. While he is engaged with the executive heads of the company in Montreal, Mrs Salter is visiting friends in California.

Lieut. F. A. Wanklyn, of the Royal Field Artillery in the British Army, has been gazetted as Captain, and has been appointed Adjutant of the Royal Flying Corps. He is a son of F. L. WANKLYN, General Executive Assistant, C.P.R., Montreal.

T. A. GORHAM, County Judge of Halton, Ont., who died at Milton, Ont., Oct. 4, aged 59, was in C.P.R. service from 1882 to 1885, rising to the position of Assistant General Superintendent at Winnipeg. He resigned in 1885 to recommence legal practice.

R. J. TAIT, formerly Freight Agent, Pere Marquette Rd., London, Ont., who resigned in the early part of the year on account of ill health, died there, Oct. 20, aged 55. He was born at Shelburne, Ont., and commenced his railway service with the Great Western Ry., now a portion of the G.T.R.

D. POTTINGER, I.S.O., who recently retired from the position of Assistant Chairman, Canadian Government Railways Managing Board, with Mrs. Pottinger, are on a trip to the Pacific Coast. They hope to spend the winter in Ottawa and return to their summer home at Shediac, N.B., in the spring.

The estate of the late JAMES ROSS, M. Can. Soc. C.E., whose death was announced in our last issue, has been valued at from $12,000,000 to $15,000,000. The public bequests approximated $400,000. It is said that he owned 25,000 C.P.R. shares, and that he was the largest individual shareholder in the company.

J. B. LAMBKIN, formerly District Passenger Agent, Intercolonial Ry., Halifax, N.S., and GEO. SKEFFINGTON, formerly in the I.R.C.'s police service at Moncton, N.B., have been appointed to exercise control over the ocean ports and railways in Eastern Canada, in connection with the suppression of the white slave traffic.

EDMUND DESCHENES, Jr., whose appointment as Auditor, Central Vermont Ry., St. Albans, Vt., was announced in our last issue, was born there Sept. 7, 1878, and entered C.V.R. service as messenger Mar., 1893, since when he has been, clerk on freight accounts, Travelling Auditor, chief clerk on passenger accounts, and chief clerk to Auditor.

C. S. CUNNINGHAM, who has been appointed a member of the Michigan State Railroad Commission, was formerly in G.T.R service, holding positions as Superintendent at London, Ont., St. Thomas, Ont., acting Superintendent and Superintendent, Western Division, Detroit, Mich., resigning in Jan., 1913, when the official staffs of the various divisions were reorganized.

JOHN L. HODGSON, whose appointment as Master Car Builder, G.T. Pacific Ry., Transcona, Man., was announced in a recent issue, was born at Simcoe, Ont., Nov. 15, 1858, and entered G.T.R. service Aug. 1, 1888, carpenter at Brantford, Ont.; Apr. 1 to Sept. 1, 1888, Car Inspector, Toronto; Sept. 1, 1888, to Mar. 1, 1897, Car Foreman, Toronto; Mar. 1, 1897, to Aug. 12, 1913, Master Car Builder, Western Division, Port Huron, Mich.

W. G. Robb.
Superintendent of Motive Power, Grand Trunk Pacific Railway.

H. D. MACKENZIE, who has been appointed District Master Mechanic, District 4, Intercolonial Ry., Stellarton, N.S., was born at Churchville, N.S., July 22, 1864, and entered I.R.C. service, July 24, 1881, since when he has been, to Sept. 1, 1897, machinist apprentice; Sept. 1, 1897, to Oct. 16, 1899, charge hand at Moncton and Stellarton, N.S.; Oct. 16, 1899, to Feb. 1, 1909, Mechanical Foreman, Stellarton, N.S.; Feb. 1; 1909, to Sept. 30, 1913, General Locomotive Foreman, Moncton, N.B.

F. E. WARREN, whose appointment as General Car Foreman, C.P.R., Winnipeg, was announced in our last issue, was born at Chelsea, Que., Aug. 29, 1872, and entered C.P.R. service Dec., 1897, since when he has been, to Dec., 1902, carpenter at Farnham, Que.; Dec., 1902, to Dec., 1905, charge hand, Farnham, Que.; Dec., 1905, to Oct., 1909, Assistant Foreman, Farnham, Que.; Oct., 1909, to Mar., 1912, Car Foreman, Hochelaga, Que.; Mar., 1912, to Aug., 1913, Division Car Foreman, Ontario Division, Toronto.

W. B. GAIR, who is stated to be a director of the Great Central Ry., of England, was in Canada recently with a view, as stated in press reports, to acquiring knowledge of methods of handling of passengers and freight on this side, and for this purpose, travelled considerably on the G.T.R. and C.P.R. We have no official knowledge as to Mr. Gair's position with the Great Central Ry., but it is not generally thought requisite in England, that a director should acquire knowledge as to the handling of either passengers or freight.

WALTER MAUGHAN, whose appointment as Assistant District Passenger Agent, C.P.R., Toronto, was announced in our last issue, was born at Toronto, Sept. 4, 1876, and entered C.P.R. service, Mar., 1892, since when he has been, to Sept., 1892, Assistant Agent, York St. office, Toronto; Sept., 1892, to July, 1895, assistant agent, Hamilton, Ont.; July, 1895, to July, 1897, ticket agent, York St. office, Toronto; July, 1897, to Mar., 1898, in Advertising Department, Toronto; Mar., 1898, to Sept., 1913, City Passenger and Ticket Agent, Toronto.

J. R. SPRAGGE, who died at Toronto, Oct. 10, aged 64, commenced his railway career with the old Northern Ry. as a fireman, and was later promoted to locomotive driver. On the construction of the Credit Valley Ry. he entered that service, and ran the first train over the line. On the absorption of the Credit Valley Ry. by the C.P.R. he remained with the latter company, and subsequently held the positions of Master Mechanic, Atlantic Division; Master Mechanic, Ontario Division, and District Master Mechanic, Toronto Jct. He left the service in 1912 on account of ill health.

CHARLES H. TILLETT, who has been appointed Supervisor of Signals, G.T.R., Montreal, was born at Peru, Ind., Dec. 8, 1885, and entered transportation service in Aug., 1907, since when he has been, to Dec., 1907, signal repair man, Pennsylvania Rd., Fort Wayne, Ind.; Apr. to Nov., 1908, interlocking work, Great Northern Ry., Seattle, Wash.; Nov., 1908, to Feb., 1910, interlocking maintenance, Cascade Division, G.N.R.; Feb., 1910, to July, 1913, Signal Inspector, Chicago and Eastern Illinois Rd., Chicago, Ill.; July to Oct., 1913, Chief Draughtsman, Signal Department, G.T.R., Montreal.

T. G. ARMSTRONG, whose appointment as Assistant Master Car Builder, Western Lines, C.P.R., Winnipeg, was announced in a recent issue, was born at Waterloo, Que., Apr. 30, 1863, and entered railway service Apr., 1888, since when he has been, to 1895, successively, bridge foreman, C.P.R., Orford Mountain Ry., and Quebec Central Ry., during construction; 1895 to 1902, in private business as general contractor and builder; 1902 to 1906, Foreman, C.P.R., Farnham, Que.; 1906 to Feb. 1, 1908, Car Foreman, C.P.R., Winnipeg; Feb. 1, 1908, to July 3, 1913, General Car Foreman, C.P.R., Winnipeg.

R. A. KLOCK, whose appointment as General Tie and Timber Agent, Canadian Government Railways, Moncton, N.B., was announced in our last issue, was born at Aylmer, Que., and was educated there, at Ottawa, and graduated from McGill University, Montreal, in arts, and later took a short military course at Kingston, Ont. He was, at one time, Tie and Timber Inspector, Atlantic Division, C.P.R., St. John, N.B., and prior to his present appointment had been engaged by the Government to inspect and ship hard pine dimension timber from Louisiana and Texas to Port Nelson on Hudson Bay.

KARL FRITJOF NYSTROM, whose appointment as Chief Draughtsman, Car Department, G.T.R., Montreal, was announced in our last issue, was born in Sweden, Sept. 2, 1881, and entered transportation service on this continent, in 1905, since when he has been, to 1908, draughtsman, Pressed Steel Car Co., Pittsburgh, Pa.; 1908 to 1909, draughtsman, Pullman Co., Chicago, Ill.; 1909 to 1911, designing engineer, Southern Pacific Co., San Francisco, Cal.; 1911 to 1912, Assistant Mechanical Engineer, American Car and Foundry Co., St. Charles, Mo.; 1912 to Oct., 1913, Mechanical Engineer, Acme Supply Co., Chicago, Ill.

ERNEST HUMPHRYS, whose appointment as Fuel Agent, Alberta Division, C.P.R., Calgary, was announced in our last issue, was born at Hull, Eng., Sept. 24, 1869, and entered C.P.R. service Aug., 1897, since when he has been, to Sept., 1898, clerk in Mechanical Department, Donald, B.C.; Sept., 1898, to Aug., 1899, stenographer, Mechanical Department, Vancouver, B.C.; Aug., 1899, to May, 1904, chief clerk to Master Mechanic, Revelstoke, B.C.; May, 1904, to Jan., 1908, chief clerk to Assistant to Second Vice President, Winnipeg; Jan., 1908, to Aug., 1913, chief clerk to Superintendent of Motive Power, Western Lines, Winnipeg.

E. H. WOOD, whose appointment as Divisional Car Foreman, Ontario Division, C.P.R., Toronto, was announced in our last issue, was born at St. John, N.B., Dec. 30, 1880, and entered C.P.R. service July 4, 1899, since when he has been, to Nov. 7, 1899, car repairer, St. John, N.B.; Dec. 4, 1899, to Apr. 30, 1900, car repairer, West St. John, N.B.; May 24, 1900, to July 31, 1903, car repairer, St. John, N.B.; Aug. 1, 1903, to Jan. 31, 1904, Car Inspector, St. John, N.B.; Feb. 1, 1904, to June 23, 1911, Car Foreman, St. John, N.B.; Jan. 24, 1911, to Apr. 8, 1912, Assistant Car Foreman, Hochelaga, Que.; Apr. 9, 1912, to Sept. 4, 1913, Car Foreman, Hochelaga, Que.

COLIN D. MACKINTOSH, A.M. Can. Soc. C.E., whose appointmemnt as Division Engineer, Saskatchewan Division, C.P.R., Moose Jaw, was announced in our last issue, was born at Auckland, New Zealand, Sept. 24, 1882, and served his apprenticeship and student years, from 1900 to 1905, with Kyle, Denni son and Laing, Civil Engineers, and at the Glasgow and West of Scotland Technical College, Glasgow, Scotland. He entered C.P.R. service in 1905, during which year he was on location survey, Toronto; 1905 to 1909, transit man; 1909 to 1910, Resident Engineer; 1910 to 1911, Locating Engineer; 1911 to Aug., 1913, Assistant Engineer on construction of double track, all on Western Lines.

W. U. APPLETON, who has been appointed General Master Mechanic, Intercolonial Ry., Moncton, N.B., was born there, Jan. 29, 1878, entered I.R.C. service as a messenger, and was transferred to the locomotive shops, serving an apprenticeship to Dec., 1899, since when he has been, to Apr., 1901, clerk in Mechanical Superintendent's office; Apr. to Sept., 1901, machinist; Sept., 1901, clerk in 1902, clerk to Superintendent of Machinery and Rolling Stock; Oct., 1902, to May, 1903, clerk in Master Car Builder's office; May, 1903, to May, 1904, clerk in General Superintendent's office; May, 1904, to Mar., 1909, chief clerk to Superintendent of Motive Power; Apr., 1909, to Sept., 1913, Assistant to Superintendent of Motive Power.

G. W. ROBB, whose appointment as Superintendent of Motive Power, G.T. Pacific Ry., Transcona, Man., was announced in our last issue, entered transportation service in 1880, since when he has been, to 1885, car repairer and apprentice, G.T.R., at Montreal, Brockville, Ont., and Point Levi, Que.; 1885 to 1886, improver, Northern Ry., Toronto; 1886 to 1888, machinist and leading hand, C.P.R., Winnipeg and Broadview, Man.; 1888 to 1889, night foreman, G.N.R., Breckenridge, Minn.; 1889 to 1891, day foreman, G.N.R., Willmar, Minn., and Glasgow, Mont.; 1891 to 1893, Locomotive Foreman, Chicago and Great Western Ry., South Des Moines, Ia.; 1893 to 1895, Shop Foreman, Canada Atlantic Ry., Ottawa; 1895 to 1907, General Foreman, Canada Atlantic Ry., Ottawa; 1907 to 1909, Assistant Master Mechanic, G.T. Pacific Ry., Rivers, Man.; 1909 to Oct., 1913, Master Mechanic, G.T. Pacific Ry., Rivers, Man.

F. E. Warren,
General Car Foreman, Manitoba Division, Canadian Pacific Railway.

JAMES ROSS, who died in Montreal recently, is said to have left an estate of about $13,000,000. He bequeathed about $400,000 to hospitals and other public institutions. Mrs. Ross receives $100,000 in cash and an annuity of $75,000 a year for life, together with the Montreal house, its contents, etc. The only son, J. K. L. Ross, and Mrs. J. K. L. Ross, get $50,000 each in cash. $1,000,000 is also to be paid the son to enable him to carry on any industry in which he may now be interested. He is also to get an annuity of $75,000 a year, and when 40 years old is to get the residue of the estate. A number of legacies and annuities are left to relatives and friends, including the following: To Mr. Ross's only sister, who is the wife of Jas. Grace, Secretary, Toronto, Esq., $10,000 a year for life, the annuity to be continued to her daughter; Granville C. Cunningham, formerly of Toronto and Montreal, and now of London, Eng.; F. L. Wanklyn, General Executive Assistant, C.P.R., Montreal; Phelps Johnson, Vice President and Managing Director, Dominion Bridge Co., and G. H. Duggan, General Manager, Dominion Bridge Co., get $5,000 each.

F. W. FORSTER, Agent, C.P.R. and Dominion Ex. Co., Liverpool, Eng., who died at Blundellsands, Liverpool, Eng., Oct. 7, was born at Sunderland, Eng., in 1871, and entered transportation service in the office of Culliford, Clark and Co., Liverpool. Prior to the opening of the Manchester Ship Canal in 1894, he moved to Manchester, and, until 1896, was in charge of the Neptune Navigation Co. there, leaving to join Elder, Dempster and Co.'s Liverpool staff. He was appointed Traffic Agent, C.P.R., Bristol, in Oct., 1903, and Agent, C.P.R. at Liverpool in July, 1911. He was a brother of Lieut Forster, R.N.R., who has recently resigned from the command of the C.P.R. s.s. Empress of Ireland on his appointment as Marine Superintendent for the company at Liverpool. A circular announcing the death, issued by G. McL. Brown, European Manager, reads as follows: "In the passing of Mr. Forster, the company loses one of its most promising officers. Conscientious and able, his devotion to duty was apparent in all his actions, and his upright character, his kindly heart and delightful personality endeared him to all with whom he came in contact."

GUY SEBERN LYTLE, whose appointment as Car Service Agent, Manitoba Division, C.P.R., Winnipeg, was announced in our last issue, was born at Denison, Iowa, Sept. 23, 1878, and entered railway service Sept. 1, 1891, since when he has been, to Feb. 1, 1893, messenger, Seattle and Northern Ry., Anacortes, Wash.; Feb. 1, 1893, to Jan. 7, 1897, agent, Seattle and Northern Ry., and Seattle, Lake Shore and Eastern Ry., at various points in Washington; Jan. 7, 1897, to May 2, 1898, operator and clerk in Superintendent's office, Seattle, Lake Shore and Eastern Ry., Seattle, Wash.; May 2, 1898, to Mar. 31, 1901, dispatcher, Seattle and International Ry., and Northern Pacific Ry., Seattle, Wash.; Mar. 31, 1901, to Feb. 16, 1907, dispatcher, Northern Pacific Ry., Tacoma, Wash.; Feb. 16, 1907, to Sept. 1, 1909, dispatcher same road, Missoula, Mont.; Sept. 1, 1909, to May 16, 1911, Assistant Chief Dispatcher, same road, Missoula, Mont.; May 16, 1911, to Sept. 5, 1912, Inspector of Train Dispatching, same road, St. Paul, Minn.; Sept. 5, 1912, to Apr. 9, 1913, Chief Dispatcher, same road, Missoula, Mont.; Apr. 9 to Aug. 25, 1913, Inspector of Transportation, C.P.R., Winnipeg.

Railway Subsidies in Alberta.

The Alberta Legislature was asked by the Premier, Oct. 18, to extend the guarantee of bonds for the construction of return lines of the Canadian Northern Ry., and of the Grand Trunk Pacific Branch Lines Co. These lines are either under construction, or their construction has been authorized, and the present extension of time is necessary to enable them to be completed.

Another resolution was submitted guaranteeing the Central Canada Ry. bonds to the extent of $20,000 a mile, for the building of a line from a point on the Edmonton, Dunvegan and British Columbia Ry., to Peace River Crossing, about 100 miles. At least 50 miles is to be constructed before Dec. 31, 1914, and the line completed and ready for traffic before December 31, 1917. Specifications are to be the same as those of the Edmonton, Dunvegan and British Columbia Ry.

Another resolution was for the purpose of encouraging the building of light railways into parts of the country away from the main lines, similar to the Blindman Valley, near Lacombe, as branches of the main lines. The resolution provided for making of grants of $2,000 a mile, towards the construction of such lines as may be from time to time approved by the Government.

The measures setting out in detail the lines affected, and the conditions of the grants, were subsequently submitted to the Legislature.

Current Track Construction on the Canadian Pacific Railway.

[illegible]

[illegible]

Electrification of the Mount Royal Tunnel, Canadian Northern Railway.

[illegible]

Railway Rolling Stock Notes.

[illegible]

[illegible] Ltd.

[illegible] Canadian Car and Foundry Co.; [illegible] and Smith Co.

[illegible]

The Busiest Railway Terminal.—[illegible]

Canadian Railway AND Marine World

ESTABLISHED 1898

Devoted to Steam and Electric Railway, Marine, Express, Telegraph, and Railway and Canal Contractors' Interests.
Official Organ of the various Canadian Transportation Associations.
Published on the first of each month.

ACTON BURROWS, LIMITED - Proprietors
70 Bond Street, Toronto, Canada

ACTON BURROWS, A.Can.Soc.C.E.,
Managing Director and Editor-in-Chief.
AUBREY ACTON BURROWS - Secretary and Business Manager.

Associate Editor - - - JOHN KEIR
Associate Editor - - - DONALD F. KEIR
Mechanical Editor - FREDERICK H. MOODY, B.A Sc

BUSINESS REPRESENTATIVES.
W. H. HEWITT, - - 70 Bond Street, Toronto
A. FENTON WALKER, 143 Liberty Street, New York, N.Y.
J. MEREDITH MCKIM, 17 Cockspur St., London, S.W., Eng.

Authorized by the Postmaster General for Canada, for transmission as second class matter, July 3, 1912.

Entered as second class matter, July 25, 1913, at the Postoffice at Buffalo, N.Y., under the Act of Congress of March 3, 1879.

SUBSCRIPTION PRICES, INCLUDING POSTAGE:

TORONTO AND WEST TORONTO POSTAL DELIVERY, $1.25 a year.

To other places in CANADA, and to NEWFOUNDLAND AND GREAT BRITAIN, $1 a year

To the UNITED STATES and other countries in the Postal Union, except those mentioned above, $1.50 a year, or six shillings sterling.

SINGLE COPIES, 15 cents each, including postage.

The best and safest way to remit is by express money order. Where one cannot be obtained, a post office money order, or bank draft, payable at par in Toronto, may be sent. Cheques or drafts not payable at par in Toronto cannot be accepted. Remittances should be made payable to CANADIAN RAILWAY AND MARINE WORLD.

NOTICE TO ADVERTISERS.

ADVERTISING RATES furnished on application.

ADVERTISING COPY must reach the publishers by the 10th of the month preceding the date of publication.

TORONTO, CANADA, NOVEMBER, 1913.

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Grand Trunk Pacific Railway Company's Annual Meeting.

The G.T.P.R. Co.'s adjourned annual meeting was held in Montreal Sept. 25. The directors' report is not made public, the reason therefor, officially given, being that the line is still under construction. The following statement has, however, been supplied for publication:—

"The construction of the main line to the Pacific has reached mile 1204 west of Winnipeg, and from Prince Rupert eastward construction has reached mile 305, leaving a section of 236 miles in British Columbia on which the grade is to be completed and the track laid, when the steel will be connected through to the Pacific Ocean. This work is being rushed forward vigorously, and it is expected that the last spike in the construction of the main line will be driven at some point in British Columbia probably within the next nine months. After this is accomplished, however, considerable work will still remain to be done along the line to put it in suitable condition for daily train service. As the line is nearing completion, interest in the vast undeveloped country through which it runs, particularly in British Columbia, is increasing, and there is every prospect that the rapid settlement of the country will take place as soon as adequate transportation facilities are provided.

"Good progress is reported on the company's chain of hotels being built across the continent as an adjunct to its transportation business. It is expected that the Fort Garry hotel at Winnipeg will be completed, ready for opening, the end of November. The construction of the Qu'Appelle hotel, which was recently commenced in Regina, Sask., at a cost of $1,000,000, is making good progress. The Macdonald hotel, under construction at Edmonton, Alta., occupies one of the finest situations in the city, overlooking the Saskatchewan River and surrounding country for many miles. It is expected that it will be completed so that it may be opened within the next twelve months. Other hotels, of the most modern architecture and equipment, are projected for attractive resorts along the line in the Rocky Mountains, and the excavation for a large hotel at the terminal at Prince Rupert was also recently commenced.

"Traffic along the line is being carried in ever increasing volume each year, and there is every prospect that the prime object for which this vast undertaking is being executed will not be lacking at any period in the company's future history."

The directors for the current year are:—E. J. Chamberlin, President; W. Wainwright, M. M. Reynolds, Vice Presidents; A. W. Smithers, Sir Henry M. Jackson, J. A. Clutton Brock, Lord Welby, H. G. Kelley, W. H. Biggar, E. B. Greenshields, R. Dandurand, W. M. Macpherson, Hon. G. A. Cox, E. R. Wood, and J. R. Booth. The officers were re-elected.

Canadian Pacific Railway Electrification in British Columbia.

Sir Thos. G. Shaughnessy visited his birthplace, Milwaukee, Wis., on his way to Winnipeg recently, and one of the enterprising individuals who provide the daily press with fairy stories telegraphed a report which was published with big headlines, stating that Sir Thomas had announced that the company's experiments with electrification in British Columbia were only preliminary to the electrification of the entire system, should the experiment prove successful. Of course, the report telegraphed was an absolute invention by the press correspondent, and was not taken seriously by transportation men. On Sir Thomas' arrival at Winnipeg, where he was interviewed about it, he laughed at the story and said that if the electrification of the Rossland subdivision, which was decided on some time ago, and the electrification of Rogers Pass tunnel proved satisfactory, the mountain section of the main line between Field and Revelstoke, B.C., would also probably be electrified.

A good deal of preliminary information about the electrification of the Rossland subdivision was given in Canadian Railway and Marine World for May, 1912, and Aug., 1913. As previously stated, an order for electric locomotives and the electric machinery was given some little time ago to the Canadian General Electric Co. We have already published general dimensions, etc., of the locomotives, of which four are said to have been ordered, and which we learn will have a regenerating electric braking device.

American Railway Bridge and Building Association.

The 23rd annual convention was held at Montreal, Oct. 21-23, this being the second time the convention has taken place in Canada, the last time being at Quebec, ten years ago. The members were welcomed by the President, A. E. Killam, formerly Inspector of Bridges and Buildings, Intercolonial Ry., and W. McNab, Principal Assistant Engineer, G.T.R., and about 100 new members, chiefly Canadians, were elected. A number of reports were received and discussed, the one dealing with the association's finances, being especially satisfactory. The entertainments included a drive round Mount Royal, a trip to the Lachine Rapids, inspection of the two bridges crossing the St. Lawrence, and a visit to Ottawa by special train provided by the C.P.R.

Railway Route Maps Approved.

The Minister of Railways has approved railway route maps as follows:—

Alberta Central Ry.—Oct. 15.—Revision of line from Tp. 26, r. 23, w. 3 m., to Tp. 27, r. 25, w. 3 m., about 14 miles;

Canadian Northern Quebec Ry.—Oct. 10.—From St. Michel to Bout de l'Isle, about 8.25 miles;

Canadian Northern Ry.—Oct. 10.—Revision of line between Sturgis and Hudson Bay Jct., Man., 47.71 miles;

Canadian Pacific Ry.—Oct. 10.—Revision of Swift Current Northwesterly line near Empress, Sask., 23.2 miles;

Montreal and Southern Counties Ry.—Oct. 10.—From St. Cesaire to Granby, Que., about 14.5 miles.

Canadian Northern Ry. Organization.—Charles Hine, who recently resigned his position at Tucson, Arizona, as Vice President and General Manager of the Southern Pacific Rd. of Mexico, and of the Arizona Eastern Rd., two subsidiaries of the Southern Pacific Co., to take up expert railway work along organization and efficiency lines, with headquarters in New York, N.Y., has been retained by the Canadian Northern Ry. executive for a limited period to go over its system and make suggestions in regard to organization, etc. He has already been over the eastern lines and will now go over the western ones.

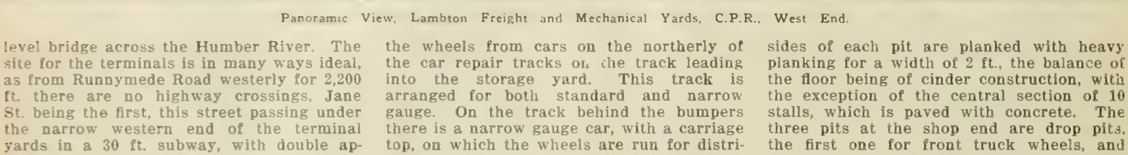
There are five possible methods for the abatement of smoke from locomotives: 1. The use of comparatively smokeless coals; 2. The use of air jets; 3. The use of mechanical stokers; 4. The instruction of the men operating the locomotives and the supervision of their work; and 5. The elimination of the steam locomotive.

Lambton Freight and Mechanical Yards, Canadian Pacific Railway.

The C.P.R.'s terminal facilities at West Toronto having become overtaxed recently, it was decided, as mentioned in these columns at the time, to build new facilities to the west of those then in use. The site selected is on the north side of the main line to Detroit, near Lambton, just beyond the city limits, which are at Runnymede Road, as shown in the accompanying plan. The terminals extend from Runnymede Road on the east to Chadwick Ave. on the west, which is near the approach of the high level bridge across the Humber River. The site for the terminals is in many ways ideal, as from Runnymede Road westerly for 2,200 ft. there are no highway crossings, Jane St. being the first, this street passing under the narrow western end of the terminal yards in a 30 ft. subway, with double approaches on the St. Clair Ave. end. Scarlett Road, further west, also passes under the line in a 44 ft. subway. At the eastern end of the terminals, the layout has been hampered to a certain degree by the presence of Runnymede Road, which made it impossible to make the yards double ended. This street is carried under the tracks at that end of the yards in a 56 ft. subway, which has at present a 6 track crossing, but the abutments are built for an additional 6 when traffic conditions warrant.

The main line from Toronto, and beyond these new terminals, is double tracked. The westerly entry to the terminals leaves the main line at Chadwick Ave., from which point into the yard ladders there are two leads 2,000 ft. long for arriving and departing trains. These will accommodate 55 car trains. The main part of the yard is double ended, and is divided into two sections for arriving and departing trains, each with a capacity of 500 cars. The arriving yard is the southerly of the two, and extends from Jane St. to the easterly end. The outgoing yard extends the full length of the yards, from the Lambton Station. The combined yards have 20 tracks, located at 13 ft. centres.

Panoramic View, Lambton Freight and Mechanical Yards, C.P.R., West End.



Plan Lambton Freight and Mechanical Yards, C.P.R., West End.

To the north of the east end of the yards there is a 12 track freight car repair yard with capacity for about 150 cars. It is arranged with two leads from the north side of the main yards, the central tracks having a car capacity of 22, with the outside tracks accommodating only three or four. Between every other pair of tracks there is a 2 ft. service track, connecting at the east end by turntables to a track running along behind the earth bumpers. The wheel storage tracks are at the north end of this track, in the open space opposite Ryding Ave., where four sets of storage tracks are being installed. At the south end of the locomotive house there is a pneumatic jib crane over the service track for unloading the wheels from cars on the northerly of the car repair tracks on the track leading into the storage yard. This track is arranged for both standard and narrow gauge. On the track behind the bumpers there is a narrow gauge car, with a carriage top, on which the wheels are run for distribution throughout the yard. The car foreman's office is in the building to the east of the repair track yard, and in the same building are housed the car stores and a small blacksmith shop of one forge. The front of the building is planked, and against the building are material bins for rough car stores. The car stores in the building are contained in 4 tiers of double bins. The building also contains an oil room, lunch room for the men, lavatory and tool room. This yard is not intended for the handling of very heavy repairs, these being handled for the most part in the main shops at West Toronto. The average capacity is 100 pairs of wheels and 100 long sills per month. The yard is in charge of J. J. Bannon, Car Foreman.

The new locomotive house and motive power handling facilities form the main part of the new terminals. The locomotive house is built entirely of concrete, and has 30 stalls, the building being divided into three sections. It opens to the southwest, the entering tracks coming from the west, there being provision for the addition of a further 10 stall unit when required. This locomotive house handles all the power formerly accommodated in the old building adjoining the locomotive shops in West Toronto.

In the centre there is an 80 ft. turntable, operated by an air motor tractor. The inner radius of the locomotive house is 95 ft., and the outer radius, 180 ft., giving a depth of 85 ft. As mentioned, it is of concrete construction, with large window area in the outer wall. The roof is of 2 by 4 in. planking, laid on edge, and covered with fireproof sheeting. It is supported on the walls and two intermediate circular rows of concrete columns. Over the forward end of each track there is a Johns-Manville asbestos smoke jack.

Each locomotive house track has a 65 ft. concrete pit, with convexed bottom, sloping to the inner edge for drainage, a pit for this purpose and for the piping being located at the forward end of the pits, passing around the building just inside the inner wall. The sides of each pit are planked with heavy planking for a width of 2 ft., the balance of the floor being of cinder construction, with the exception of the central section of 10 stalls, which is paved with concrete. The three pits at the shop end are drop pits, the first one for front truck wheels, and the next two for driving wheels. The intervening space between these pits at the shop end is floored with heavy planking, on which the wheels can be run from the wheeling tracks, and then into the machine shop.

Alongside each smoke jack, at about 8 ft. centres, there is suspended a light trolley with a 6 ft. rod attached thereto, the tracks being about 36 ft. long. This length covers the locomotive forward of the cab, and is found most useful in the handling of the exterior locomotive fittings such as the bell stand, etc., without the necessity of slinging a block and tackle over a beam. A block and tackle is attached to the trolley to be used, and can be moved along the length of the locomotive at will. The trolley capacity is about 1,000 lbs., which is ample for the handling of such light fittings as would come under running repairs. Only light repairs are handled here, the heavy ones being sent to the nearby locomotive shop in West Toronto.

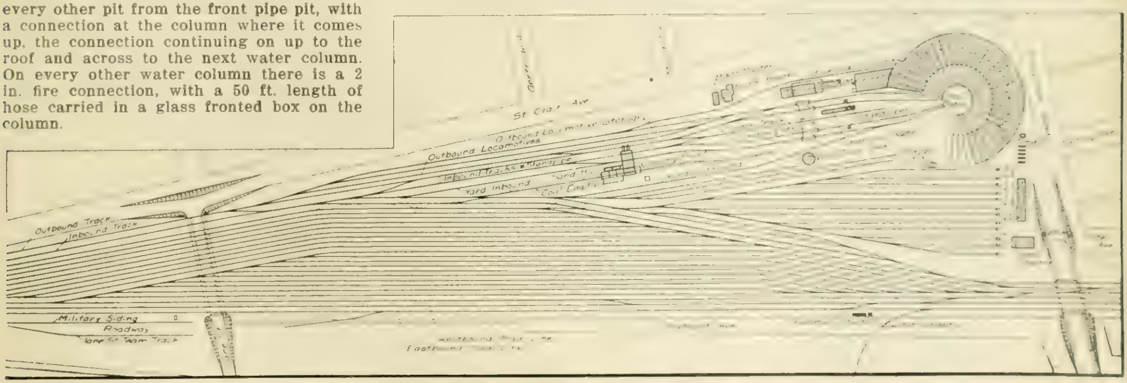
The general lighting of the locomotive house is by clusters of three 32 c.p. incandescent lamps suspended from the roof near each of the columns. These lights are controlled from a central switchboard panel in groups of 3 pits. In addition to this general lighting, there are incandescent lamp sockets around the walls, and in each pit there are two lamp cord connections.

The indirect system of heating is employed throughout the locomotive house by means of batteries of pipes in the pits and along the walls. In the pits along each wall there are four lengths of pipe, with similar units along the outer wall. Exhaust steam is employed, supplied through a pipe in the circular pit. The pit also contains a 2 in. steam main, 3 in. water main, and a 1½ in. air main. These all have connections to the columns between the pits.

Panoramic View, Lambton Freight and Mechanical Yards, C.P.R., East End.

Near the entrance from the locomotive house into the machine shop there is a Miller washout plant which is found very useful. Three sets of piping run from this plant, suspended from the roof, to a column between every other pit. All the column connections are 2 in., branching from 4 in. mains. Through these connections, the blow off water can be drawn off to the washout plant, where it is held in one compartment of the large tank, and is used over again for washout purposes, one line being provided for this purpose. The third line is for filling the locomotive boiler with clear water at about 200 degrees. The temperature of the washout water is automatically regulated to 125 degrees for convenience of the men in handling.

On every water column there is an air connection for blowing purposes, this connection coming up through the floor between every other pit from the front pipe pit, with a connection at the column where it comes up, the connection continuing on up to the roof and across to the next water column. On every other water column there is a 2 in. fire connection, with a 50 ft. length of hose carried in a glass fronted box on the column.



Plan Lambton Freight and Mechanical Yards, C.P.R., East End.

In addition to the foregoing special facilities, in the shop end of the locomotive house there is a small forge for general work, with iron rack adjoining. These are both located in the space between adjoining pits. Here are about 100 expanded metal lockers for the employes in the building, ranged along the partition walls.

The machine shop is contained in a 50 by 90 ft. addition to the west end of the locomotive house. The south side of this building is separated from the machine shop, and contains the offices for the locomotive foreman and his staff, and a room for the men to register trips. This section of the machine shop building is only half the height of the shop, and over the offices, open to the machine shop, there is an air brake testing department, and accommodation for the electricians.

The machine shop contains the following equipment: 16 in. double punch and shear, small press, large press, 2 in. bolt machine, heavy drilling machine, small drilling machine, 26 in. shaper, 18 and 36 in. lathes, grindstone and double emery. The tool room for the shop is in the V corner, adjoining the door into the locomotive house. In the opposite corner is the power equipment, consisting of a small vertical high speed engine for shop drive, and a 16 by 16 by 9 in. air compressor. The westerly section of the shop is divided off for the boiler room, containing three 120 h.p. locomotive boilers carrying 120 lbs. of steam. Outside the boiler room there is a 95 by 10 ft. stack. Adjoining the stack there is a standard C.P.R. air storage tank, with a similar one at the opposite end of the locomotive house for supplying air to the freight car repair yards, which are piped for air. The pressure carried is 100 lbs.

To the west of the machine shop is the stores building, equipped in the usual manner with racks, etc., for the accommodation of the stock material, and a Bowser equipment for the oil, with storage tanks in the basement. The floor is on a level with that of a car, with a platform along two sides of the building for unloading stores. At the east end of the platform there are stores bins for the rough supplies.

The west end of the stores building is used by the locomotive department, a room in the southwest corner of the building containing racks for the enginemen's clothes and tool boxes. An adjoining room contains the enginemen's oil cans, etc. Both these rooms are in the charge of an attendant. This man's duties also consist in recording departures, detentions, etc., a system that has been found valuable in locating the cause of delays. Along the west wall in this building there is a bench room for the ashpit men and in the southwest corner of the building there is a room used as a general storing room by the locomotive department in which are kept winter doors out of season, patterns of buffer beam and other parts, curtains, and such material.

Charcoal is employed for lighting fires, and is contained in a frame building to the southeast of the stores building. The east end of this building is a window sash storing room, in which all the double windows of the locomotive house are stored in summer, all the windows in the plant being provided with double storm sashes. The charcoal house portion, which comprises the westerly three quarters, is divided into two equal rooms, both of which have a storage capacity of about one carload of charcoal. The practice followed is to draw from the one room at a time, completely emptying it before commencing on the second. In this manner, better check is kept on the material, and the charcoal is kept in a better form for use than if it were constantly being trampled over as in a single room store.

To and from the locomotive house, there are 2 inbound and 4 outbound tracks, with four immediate tracks connecting with the turntable pit. For the handling of the ashes on the locomotives there are two Ord ash handling plants of the type described in Canadian Railway and Marine World, Oct., 1911. Over each there are two tracks, with a blind track between for spotting ash cars. In the accompanying panoramic view of the mechanical terminals a locomotive is shown on the left dumping ashes.

The coal handling plant is of the C.P.R. standard type, consisting of a chain of buckets raising the coal from lower hoppers to hoppers over the service tracks. The plant is of 300 tons capacity, and has four chutes. Coal cars come into the plant up a ramp, which is continued 9 car lengths beyond the plant. A string of cars can thus be fed through the plant as required from the stub end without assistance from the yard crew, once the train of 10 cars is run up the ramp. Adjoining the coaling plant there is a sand storage bin, from which the sand is elevated into hoppers on the coal hopper frame for feeding into the locomotive.

Locomotive water is obtained from the city service, there being a 60,000 gal. tank on the grounds. Between each of the pairs of ashpit tracks, and between two of the coaling plant tracks, as well as on one of the tracks passing the tank, there are water spouts, so that a locomotive can be watered on any one of 7 tracks.

On the St. Clair Ave. side of the yards there is an old house, now used by the locomotive department as a bunk house for the locomotive drivers and firemen. In the rear of the bunk house there is a well equipped kitchen where the men may cook meals, and the centre room is for dining. The front room of the house is fitted up for a reading room, with current railway technical literature, as well as books and general periodicals. This room also contains a series of air brake charts that are handy for the men's reference. The upstairs section of the house has a chain of bedrooms, containing 12 beds. Below stairs is a register book for the men's calls.

The Locomotive Foreman of this new locomotive terminal is F. Ronaldson, to whom we are indebted for the data on which this article is based.

Construction of the Alberta and Great Waterways Railway Arranged For.

After considerable difficulty, political and legal, for over three years, the Alberta Legislature has passed a new act, which is expected to settle all the difficulties which have arisen, and which provides for the building of the line under new auspices. The act repeals the one passed in 1910, by which the funds of the A. and G. W. Ry. Co. were declared to be part of the general funds of the province; ratifies the provincial guarantee of $7,000,000 of bonds, authorizes the Provincial Treasurer to deliver the bonds to the trustees for the bondholders, in exchange for the interim bonds issued, authorizes the banks to pay over the money now held to such banks as the province shall appoint; and authorizes the building of the line, the work to be started by Dec. 31.

In introducing the measure the Premier announced that the line would be built by J. D. McArthur, the Winnipeg contractor, who is President of the Edmonton, Dunvegan and British Columbia Ry. The offer made by Mr. McArthur was dated Sept. 22, and the main sections of the bill were drawn on the lines of the offer. The work is to be done on the general lines laid down in the original guarantee act, and the railway is to be finished by Dec. 31, 1915.

During the discussion on the bill, which continued every day for nearly three weeks, in the House and in Committee, a large number of amendments were considered. The principal one of these dealt with an offer put in by Janse Brothers and associates, to build the line at $16,766 a mile, which is less than the McArthur offer. This was defeated by a considerable majority.

The original act was passed Mar. 1909, and provided for the guarantee of bonds for $20,000 a mile for the construction of the main line from Edmonton to Lac la Biche and Fort McMurray, 350 miles; and an additional amount of $400,000 to provide terminals at Edmonton. The country through which the line will run is reported to be rich in minerals and the railway would give connection between Edmonton and the great waterways of the Mackenzie River basin, on to the Arctic ocean.

Railway Transportation Problems of the Future.

By J. Grant MacGregor, M. Can. Soc. C.E., Assistant Engineer, Construction Department, Canadian Pacific Railway Red Deer, Alta.

It is to be hoped the writer may be excused if he again refers to a subject which, although by no means a dead issue, can only be dealt with summarily in the columns of a technical journal. Mr. Wicksteed's reference to the subject in Canadian Railway and Marine World for October and his able elucidation of some of the more salient points referred to under the same heading in the September issue, suggest to the writer means by which his views can be expressed more fully on certain points, calculated otherwise to remain obscure or misinterpreted. For instance, in discriminating between the advantages of the operation of easy and steep grade standards of roads, regard should be had to the fact that, as the former has been constructed, or perhaps reconstructed, at apparently greater cost than the latter, every opportunity should be afforded the more expensive line to earn revenue proportionate to its cost, and where the volume of traffic is unlimited, this can only be done by equipping the road to its fullest capacity with modern equipment.

Generally speaking, the main object of grade reduction would be to provide for a prospective increase of business, the rate of which may be already taxing the efforts of the mechanical and operating departments to their utmost limits. But, for economy in operation, there should be a certain limit to the number of trains necessary, and in order to handle an increased volume of business with the same number of train units, lower grades and heavier train loads are sought. Again it is evident that if we assume that the modern steam locomotive has attained its highest degree of efficiency, a perpetual saving on cost of train mileage operated can only be looked for in the direction of grade reduction and curve elimination. It is this perpetual saving in cost of operation of an easy grade standard line that often fails to be appreciated to the fullest extent, when the line is turned over for operation. The remark is often made that lines with continuous stretches of low ruling grade are harder to operate than a line with broken grades, some of which may be steeper than the ruling grade. The reason should not be hard to find, nevertheless the idea is apparently a fallacious one, that it is impossible for a locomotive of the proper type, i.e., with sufficient boiler capacity and grate area, etc., to keep up a uniform speed over long stretches of low ruling grade. Experiments made by the various railways with mechanical stokers have, to a large extent, proved the fallacy of this idea, and locomotives of the proper type should no longer be held responsible for a defect which is apparently a physical one on the part of the fireman. The minimum speed of 10 miles an hour usually given on speed diagrams is no doubt too low, and tractive power should be provided for a speed of not less than 15 or 20 miles an hour on divisions where long stretches of ruling grade are developed. The writer's contention, however, is not to the end that it is necessary for all these ideal conditions to exist, and that obselete locomotives should be consigned to the scrap heap, otherwise the business of a railway must be run at a loss, but rather that they are factors and possibilities which sooner or later must be counted upon, and should now enter into all calculations for future development.

In dealing with new location, or grade reduction problems, it is wise, no doubt, as Mr. Wicksteed's remarks would appear to indicate, to have due consideration for the imperfections and frailties of our present means of operation, providing that what can be accomplished under those conditions is a step in the right direction. The writer is aware of the menace to the operating department of the type of profile certain topographical features will develop, but would be sceptical about the advantage of taking an occasional jump over a summit, if at all in excess of the ruling grade, unless, of course, in cases where momentum is a factor. Pusher grades of proper length, however, can very profitably be introduced at places where convenient for operation, such as at divisional points, but generally speaking they are unsatisfactory in the quick handling of passenger trains.

It would be interesting to know to what extent the practice of locating for future grade reduction is carried on throughout the Dominion. By this practice the results obtained are extremely gratifying, on account of the light character of profile obtained for immediate construction and the enormous saving in the cost of future grade reduction. By locating important lines, capable of future development, with this end in view, right of way, bridges, townsites, etc., need not necessarily be abandoned during reconstruction.

Mr. Wicksteed has treated the question of the comparative advantages of steam and electric motive power in a very interesting manner, but unfortunately leaves us without a ray of hope as to the future, because of the enormous capital already invested in steam power equipment. The change, of course, must be a gradual one, but if a systematic start were once made, and a practicable method of interchange instituted for the carrying on of the two systems simultaneously, it is possible that great strides could be made by the time the steam locomotive now being built at the shops is relegated to service on some unimportant branch line.

Canadian Railway Club.—Consequent on the removal of C. Murphy, formerly General Superintendent of Transportation, C. P. R., from Montreal to Winnipeg, as General Superintendent, Manitoba Division, C. P. R., and the removal of D. Crombie, formerly General Superintendent of Transportation, G. T. R., from Montreal to Detroit, Mich., in Pere Marquette Rd. service, L. C. Ord, General Car Inspector, C. P. R., Montreal, has been elected Second Vice President, Canadian Railway Club, vice C. Murphy; C. Manning, secretary to Superintendent of Motive Power, G. T. R., Montreal, has been elected a member of the Executive Committee, vice D. Crombie, and H. Osborne, Assistant Superintendent of Motive Power, C. P. R., Montreal, has been elected a member of the Executive Committee, vice L. C. Ord.

W. M. DUNLOP, chartered accountant, Ottawa, in renewing his subscription to Canadian Railway and Marine World, writes: "I enclose express order to cover my annual subscription to your valuable paper, and may just say it is quite worthy of due appreciation for its useful information."

Appointments and Territcrial Divisions for Canadian Pacific Railway Atlantic and Pacific Steamship Lines.

The following appointments and territorial divisions for the Transatlantic and Transpacific Steamships Services, have been announced, effective from Oct. 1: –

St. John, N. B., District Passenger Agent, W. B. HOWARD, with territory covering Nova Scotia, New Brunswick, Prince Edward Island, Quebec, St. Charles and east, except on Intercolonial Ry. from Quebec to New Brunswick boundary; Newfoundland, and Maine from eastern boundary to and including Bangor.

Montreal, General Agent, Passenger Department, W. WEBBER, with territory covering Quebec west of St. Charles, and Megantic along Intercolonial Ry. from Quebec to New Brunswick boundary; C. P. R. main line east of Port Arthur and Sault Ste. Marie, Ontario, east of Kingston, including Kingston and Pembroke Ry. north of Sharbot Lake; C. P. R. between Richport and Newport inclusive, and Boston and Maine Rd. between North Derby and Newport inclusive, also Oswego, Sackett's Harbor and ports along the St. Lawrence in New York State.

Toronto, District Passenger Agent, M. G. MURPHY; Assistant District Passenger Agent, I. E. SUCKLING, with territory, Ontario west of and including Kingston and Sharbot Lake to Windsor, and south of Sudbury and North Bay; Buffalo and points in New York State along Niagara River.

Winnipeg, General Agent, Passenger Department, J. S. CARTER, with territory covering the Canadian West, from Port Arthur and Fort William to British Columbia boundary.

Vancouver, General Agent, Passenger Department, J. J. FORSTER, with territory covering British Columbia and Alaska.

Boston, Mass., General Agent, Passenger Department, F. R. PERRY, with territory covering Connecticut, except N. Y., N. H. & H. Rd. coast line between New York and Woodmont; Rhode Island,- Massachusetts, Vermont, excepting C. P. R. between Richford and Newport; and Boston and Maine Rd. between North Derby and Newport; New Hampshire and Maine, as far east as, but not including, Bangor.

New York, N.Y., General Agent, Passenger Department, W. H. SNELL, with territory covering Connecticut along N. Y., N. H. & H. Rd. coast line from New York to Woodmont; New York, except Buffalo and points along Niagara River and Oswego, Sackett's Harbor and points along St. Lawrence River; New Jersey; Pennsylvania, east of a line drawn from Hyndman, Altoona and Clearfield north to Pennsylvania line and along Buffalo, Rochester and Pittsburgh Ry. main line; Delaware, Maryland, east of Cumberland, Virginia; North and South Carolina, Georgia, Florida and Washington, D. C.

Pittsburgh, Pa., General Agent, Passenger Department, C. L. WILLIAMS, with territory, Ohio, east of a line drawn from Marietta to Newark, up to but not including Mansfield, Akron and Youngstown to the Pennsylvania line; Pennsylvania, west of a line drawn from Hyndman, Altoona and Clearfield north to Pennsylvania line and along Buffalo, Rochester and Pittsburgh Ry. main line; Maryland, Cumberland and west, and West Virginia.

Cincinnati, Ohio, General Agent, Passenger Department, M. E. MALONE, with territory, Ohio, except portion east of line drawn through Marietta to Newark up to Mansfield, Akron and Youngstown to Pennsylvania State line and north thereof; Indiana except portion on and north of Wabash Rd.; Kentucky, Tennessee, Alabama, Mississippi and Louisana.

Detroit, Mich., District Passenger Agent, A. E. EDMONDS, with territory covering lower peninsula of Michigan and Lake Shore and Michigan Southern Ry from Toledo to Sandusky, Ohio, and portion of Ohio east and north of line drawn from Sandusky to Bucyrus,' thence east through Mansfield, Akron and Youngstown to Pennsylvania State line.

Chicago, Ill., General Agent, Passenger Department, G. A. WALTON; Assistant General Agent, H. M. MacCALLUM, with territory covering, Illinois; Iowa, southeast of Chicago, Milwaukee and St. Paul Ry.; and Northwestern Line from McGregor to Sheldon, Sheldon to Sioux City (Sioux City neutral with Minneapolis District); on and north of wabash Rd. in Indiana and portion of South Dakota west of Missouri River; Missouri, Oklahoma, Arkansas, Texas, Mexico, except Lower California and Sonora; Kansas, Nebraska, Colorado, New Mexico, Utah, Wyoming and Wisconsin as far north as line drawn from Kawaunee through Wausau, Marshfield and Merrillan to La Crosse, excluding Green Bay and Fort Howard.

Minneapolis, Minn., General Agent, Passenger Department, H. M. TAIT, with territory, northern Michigan, Wisconsin north of line from Kewaunee through Wausau, Marshfield and Merrillan to La Crosse; Minnesota. North and South Dakota.

Los Angeles, Cal., General Agent, Passenger Department, A. A. POLHAMUS, with territory, California, Bakersfield, Santa Barbara and south; Arizona, and Sonora, in Mexico.

* San Francisco, Cal., General Agent, Passenger Department, G. M. JACKSON, with territory, California, north of Bakersfield and Santa Barbara, and Nevada.

Portland, Ore., General Agent, Passenger Department, F. R. JOHNSON, with territory covering Oregon west of line drawn southerly from Hood River on Oregon-Washington Rd. and Navigation Co.'s line not including Hood River, to California-Oregon State line, including Southern Pacific Line and branches; Washington south of Kalama on O. W. R. & N. Co.'s line, G. N. and N. P. Rys., and west of White Salmon on Spokane, Portland and Seattle Ry.

Seattle, Wash., General Agent, Passenger Department, E. E. PENN, with territory covering Washington west of line drawn northeasterly from Kalama on G. N. and N. P. Rys. and O. W. R. & N. Co.'s line, including Kalama, through Ellensburg on N. P. and Chicago, Milwaukee and Puget Sound Rys., thence northerly through Leavenworth on G. N. R. to International boundary, not including Ellensburg and Leavenworth.

Spokane, Wash., General Agent, Passenger Department, T. J. WALL, with territory covering, Montana and Idaho, and Washington east of and including White Salmon, Ellensburg and Leavenworth, Oregon east of and including Hood River.

W. G. ANNABLE is General Passenger Agent, Transatlantic Steamship Service, and C. E. BENJAMIN is General Passenger Agent, Transpacific Steamship Service, both with offices at Montreal.

To obtain from modern locomotives the average power required from them, it is necessary to consume fuel at the rate of about 100 lbs. of coal per sq. ft. of grate per hour, and to obtain the maximum power required, it is necessary to increase this amount to 150 lbs., and at times, even in excess of this amount.

Halifax Ocean Terminals, Intercolonial Ry.

Tenders are under consideration by the Railways Department for contract 3 of the first work of the docks, etc., to be built at Halifax, N.S., in connection with the new ocean terminals for the I.R.C. The work covered by the contract will be situated along the west shore of Halifax harbor, and will extend from the northern boundary of His Majesty's lumber yard southwesterly to the northern boundary of the Royal Nova Scotia Yacht Squadron's property, a distance of 3,200 ft. The works will include the following quay walls and quays:—North return end of bulkhead passenger landing quay, 83 ft.; bulkhead passenger landing quay, 2,006 ft.; north quay of basin no. 1, 1,208 ft.; west quay of basin no. 1, 95 ft.; north quay, pier A, 1,250 ft.; east quay, pier A, 320 ft.; south quay, pier A, 1,250 ft.; west quay, basin no. 2, 320 ft.: the dredging of the harbor or front, north and east of the bulkhead passenger landing quay, to give a minimum depth of 45 ft. at low water of ordinary spring tides, and in basins 1 and 2 to give minimum depths varying from 30 to 35 ft. at low water of ordinary spring tides; filling and grading to such levels as may be required for quays and sheds, and of all such areas as may be required behind the quay walls to complete the filling and grading of the whole terminal area to be reclaimed from the harbor for the first work of the ocean terminals; the construction of sewers; concrete and timber piling and concrete foundations and substructures for passenger and cargo transit sheds and buildings to be erected on the bulkhead passenger landing quay, north quay of basin no. 1, and north and south quays of pier A. Prior to starting any new work the contractor is to clear the site, and to remove therefrom existing buildings, wharves and structures.

All the works north of the cope line of the north quay of pier A are to be completed by May 1, 1916, and the remainder by May 1, 1917. The whole is to be carried out under the direct charge of Jas. McGregor, M. Can. Soc. C.E., Superintending Engineer, F. W. Cowie, M. Can. Soc. C.E., being Consulting Engineer, both acting under F. P Gutelius, M. Can. Soc. C.E., General Manager Canadian Government Railways.

The C.P.R.'s Operations in Austria.—During October, following charges against S. Altman, Agent, C.P.R., Vienna, Austria, for alleged breaches of the emigration laws in assisting persons liable for military service to emigrate, the C.P.R. offices throughout Austria were raided and closed, as also were the offices of the Uranium Steamship Co. It would appear that the Austrian Government fears that owing to the increasing numbers emigrating to Canada, and to the unsettled condition in the Balkan States, the numbers from whom the reserves would be drawn for active service, would be depleted. The matter has become entangled with politics, and a number of charges have been made involving members of the Government and others. A rigid investigation is promised.

Electrification of London and Port Stanley Ry.—The ratepayers of London, Ont., on Oct. 22, approved by a vote of 2,820 to 2,074, a bylaw providing $700,000 for the electrification of the London & Port Stanley Ry. between London and Port Stanley, Ont., 24 miles, which is operated by the Pere Marquette Rd. under a lease, which is about to expire. It is said that the work of electrification will be started as quickly as possible, and that it is expected to have it completed by July 1, 1914. A London dispatch says that the city council will name a commission of five, of which the mayor will be one, to equip, maintain and operate the line.

Transportation Appointments Throughout Canada.

[illegible] entirely gathered from official sources, is compiled with the greatest care, so as to ensure absolute accuracy. Anyone who may notice any error in our [illegible] by advising us.

Algoma Central and Hudson Bay Ry., Algoma Eastern Ry.—G. A. MONTGOMERY, heretofore Superintendent, Algoma Central and Hudson Bay Ry., Sault Ste. Marie, Ont., has been appointed General Superintendent, A.C. & H.B.R. and A.E.R. Office, Sault Ste. Marie, Ont.

Algoma Central and Hudson Bay Ry.—A. J. DONEGAN, heretofore Assistant Superintendent, Hawk Jct., Ont., has been appointed Superintendent, Agawa, Northern and Michipicoten Divisions. Office, Hawk Jct., Ont.

Canadian Government Railways.—G. R. JOUGHINS, Superintendent of Motive Power, has had his title changed to Superintendent Rolling Stock. Office, Moncton, N.B.

E. P. CRONK, formerly Superintendent, National Transcontinental Ry., Edmundston, N.B., has been appointed City Freight Agent, Toronto.

See also Intercolonial Ry.

Canadian Northern Ry.—C. WHEATON, heretofore Car Foreman, Edmonton, Alta., has been appointed Car Foreman at Port Arthur, Ont., vice J. Grant transferred.

J. GRANT, heretofore Car Foreman, Port Arthur, Ont., has been appointed Car Foreman, Dauphin, Man., vice C. R. Stokes, transferred.

The position of Travelling Dining Car Conductor, heretofore held by P. ACKERMANN, has been abolished.

C. H. WORBY has been appointed Inspector of Sleeping and Dining Cars, vice G. S. Andrews, resigned. Headquarters, Winnipeg.

G. H. CULLINGFORD and A. E. KNIGHT have been appointed Inspectors of Sleeping and Dining Cars. Headquarters, Winnipeg.

C. R. STOKES, heretofore Car Foreman, Dauphin, Man., has been appointed Car Foreman, Saskatoon, Sask., vice C. A. Abbott, transferred.

C. A. ABBOTT, heretofore Car Foreman, Saskatoon, Sask., has been appointed Car Foreman, Edmonton, Alta., vice C. Wheaton, transferred.

Canadian Pacific Ry.—H. R. NAYLOR, heretofore General Car Foreman, West Toronto, Ont., has been appointed Division Car Foreman, Eastern Division, vice G. E. Smart, resigned to enter Canadian Government Railways service. Office, Montreal.

F. W. FOX, heretofore assistant to G. H. Ham in the Publicity Department, has been appointed editor of the Press Bureau, which is now part of the General Publicity Department, under J. M. Gibbon, General Publicity Agent.

W. K. THOMPSON, heretofore Superintendent, District 1, Ontario Division, has been appointed Superintendent, District 3, Ontario Division, vice W. Coulter transferred. Office, Toronto.

W. J. UREN, heretofore Superintendent, District 2, Alberta Division, Calgary, has been appointed Superintendent, District 1, Ontario Division, vice W. K. Thompson transferred. Office, Toronto.

JAMES COWLEY, heretofore Foreman, West Toronto shops, has been appointed acting Car Foreman, Toronto, vice G. G. Gagnon, transferred to Hochelaga, Que., as announced in our last issue.

W. H. POLLEY has been appointed Assistant City Passenger Agent, Toronto.

A. R. LAUDER has been appointed acting District Master Mechanic, District 2, Lake Superior Division, vice J. H. Brooks, who is acting as a member of the examining board visiting different points on the Eastern Lines, examining firemen for promotion as locomotive drivers. Office, Chapleau, Ont.

S. A. SIMPSON, heretofore Superintendent, Sleeping, Dining and Parlor Cars and News Service, Alberta Division, Calgary, has been appointed Superintendent, same department, Manitoba Division, vice A. W. Porter, transferred. Office, Winnipeg.

A. J. MEGRUND, Roadmaster in charge of double track construction west of Brandon, Man., on Broadview Subdivision, and who has also been acting Roadmaster, Broadview Subdivision, will return to the Brandon Subdivision with headquarters at Winnipeg, during November, when double track will be discontinued for the season.

T. M. FRASER, heretofore Roadmaster, Winnipeg, has been appointed Roadmaster, Broadview Subdivision, vice A. J. Megrund, who has been acting during the absence on sick leave of M. Lillis. Office, Broadview, Sask.

A. W. PORTER, heretofore Superintendent, Sleeping, Dining and Parlor Cars and News Service, Manitoba Division, Winnipeg, has been appointed Superintendent, same department, Saskatchewan Division, vice D. S. Fraser, transferred. Office, Moose Jaw.

H D Mackenzie.
Master Mechanic, District [illegible], Intercolonial Railway.

W. WHITTAKER has been appointed Inspector, Investigation Department, Saskatchewan Division, Moose Jaw, vice H. O. Wunderling, transferred to the British Columbia Division at Vancouver.

P. F. WEISBROD, heretofore acting Superintendent, Calgary Terminals, has been appointed Superintendent, Calgary Terminals. Office, Calgary, Alta.

D. S. FRASER, heretofore Superintendent, Sleeping, Dining and Parlor Cars and News Service, Saskatchewan Division, Moose Jaw, has been appointed Superintendent, same department, Alberta Division, vice S. A. Simpson, transferred. Office, Calgary.

E. OFFICER, heretofore in General Passenger Department, Winnipeg, has been appointed Travelling Passenger Agent, Calgary, Alta., vice A. G. Brooker, transferred to Regina, Sask., as announced in our last issue.

H. O. WUNDERLING has been appointed Inspector, Investigation Department, British Columbia Division, Vancouver, and not Chief of Special Service Department for that division, as stated in our last issue.

T. McNEIL, heretofore Agent, Antwerp, Belgium, has been appointed Agent, Liverpool, Eng., vice F. W. Forster, deceased.

W. D. GROSSET, who is reported to have been chief assistant in the General Offices in London, Eng., has been appointed Agent at Antwerp, Belgium, vice T. McNeil, transferred to Liverpool, Eng.

Appointments and territorial divisions relating to the Transatlantic and Transpacific Steamship Service will be found under a separate heading on another page of this issue.

Grand Trunk Pacific Ry.—W. CASH has been appointed Car Foreman, Fort William, Ont., vice H. E. Jell, transferred.

E. HACKING, General Car Foreman, has had his office moved from Melville, Sask., to Transcona, Man.

R. MOORE, heretofore Car Foreman, Melville, Sask., has been appointed Car Foreman, Rivers, Man., vice E. C. Ferguson, transferred.

W. MILLS, formerly Master Car Builder, Algoma Central and Hudson Bay Ry., Sault Ste. Marie, Ont., has been appointed Car Foreman, G.T.P.R., Melville, Sask., vice R. Moore, transferred.

H. E. JELL, heretofore Car Foreman, Fort William, Ont., has been appointed Car Foreman, Biggar, Sask., vice J. Robby, assigned to other duties.

E. C. FERGUSON, formerly Car Foreman, Rivers, Man., and subsequently transferred to Edson, Alta., in a similar position, having left the service, C. A. MUNROE has been appointed Car Foreman at Edson.

G. A. NICHOLL, heretofore Superintendent, Prince Rupert, B.C., has been appointed Commissioner, Colonization and Industrial Department. Office, Prince Rupert.

The following agents have been appointed:—Raith, Ont., D. R. Rorke; G.T.P. Jct., Man., H. McCreadie; Uno, Man., C. E. Fletcher; Lazare, Man., G. A. Swan; Spy Hill, Sask., W. Harte; Birmingham, Sask., A. J. Cantin; Balcarres, Sask., V. D. Sibbald; Duff, Sask., C. McMahon; Northgate, Sask., S. Anderson; Frobisher, Sask., R. J. Wilson; Minard, Sask., M. E. Evans; Dodsland, Sask., W. R. Stockdale; Loverna, Sask., R. W. Pearsall; Trochu, Alta., A. G. Sinclair; Mile 145, B.C., A. W. Bennett.

Grand Trunk Ry.—THOMAS RODGER, heretofore Inspector of Telegraphs and Telephones, has been appointed Supervisor of Plant, with jurisdiction over all matters appertaining to telegraph and telephone traffic, and his former title has been abolished. Office, Montreal.

C. H. TILLETT, heretofore Chief Draughtsman, Signal Engineer's Office, Montreal, has been appointed Supervisor of Signals, vice R. A. Becker, resigned. Office, Montreal.

The following agents have been appointed:—St. Hyacinthe, Que., F. C. Bouvette; Chaudiere Jct., Point Levi and Quebec (Freight), Que., E. Fournier; Levis, Que., A. J. Roy (Pass.); Concord, Ont., A. G. Mortson; Aurora, Ont., W. J. Buchanan; Powassan, Ont., T. A. Wickett; Milton, Ont., J. E. Bell; Glen Huron and Nottawa, Ont., J. B. Snowden; New Hamburg, Ont., W. A. Cober; Mandaumin, Ont., S. P. O'Neil (Pass.); Brussels, Ont., S. E. Smith.

Intercolonial Ry.—W. U. APPLETON, heretofore Assistant to Superintendent of Motive Power, has been appointed General Master Mechanic, in charge of all engine houses and shops, except Moncton shops, locomotives and machinery, and will perform such other duties as proper authority may direct. Office, Moncton, N.B.

A. C. BARKER has been appointed Inspector of Stations, Trains and Train Dispatching, including the instructing of all employes in Standard Code Rules. Office, Moncton, N.B.

G. E. SMART, hertofore Division Car Foreman, Eastern Division, C.P.R., Montreal, has been appointed Master Car Builder in charge of all car shops, and will be responsible for maintenance, repair and cleaning of all cars and efficient and economical operation of shops, and will perform such other duties as proper authority may direct.

J. C. FULMORE, heretofore Roadmaster, Halifax, Truro and Stellarton District, Truro, N.S., has been appointed Roadmaster, Point Tupper to Sydney District, vice W. P. Mills, promoted. Office, Sydney, N.S.

A. E. WELLWOOD, heretofore Inspector, Point Tupper to Sydney District, Sydney, N.S., has been appointed Roadmaster, Stellarton to Mulgrave District, vice A. B. Gray, retired on the pension fund. Office, New Glasgow, N.S.

H. D. MACKENZIE, heretofore General Locomotive Foreman, Moncton, N.B., has been appointed District Master Mechanic, District 4. Office, Stellarton, N.S.

W. P. MILLS, heretofore Roadmaster, Point Tupper to Sydney District, Sydney, N.S., has been appointed Bridge and Building Master, Truro to Sydney District. Office, Sydney, N.S.

C. W. ARCHIBALD, heretofore Resident Engineer, Truro to Sydney District, New Glasgow, N.S., has been appointed Roadmaster, Halifax, Truro and Stellarton District, vice J. C. Fulmore, transferred. Office, Truro, N.S.

G. COOPER, heretofore section foreman, has been appointed Roadmaster, Painsec Jct. to Truro District, vice W. J. Lockhart, retired on pension fund. Office, Moncton, N.B.

W. E. BARNES, heretofore Division Master Mechanic, Moncton, N.B., has been appointed District Master Mechanic, District 13. Office, Moncton.

JOSEPH GRAHAM, heretofore Foreman of Erecting Shop, has been appointed Superintendent Locomotive Shops, vice H. D. McKenzie, General Locomotive Foreman, transferred. Office, Moncton, N.B.

T. McPHERSON, heretofore General Roadmaster, Moncton, N.B., has been appointed Roadmaster, Point du Chene to St. John District, vice A. H. Somers, transferred. Office, Moncton, N.B. The position of General Roadmaster has been abolished.

A. H. SOMERS, heretofore Roadmaster, Point du Chene to St. John District, Moncton, N.B., has been appointed Roadmaster on the National Transcontinental Ry. section between Moncton and Edmunston, which is being operated by the I.R.C. Office, Edmunston, N.B.

T. W. HENNESEY has been appointed District Master Mechanic, District 2. Office, Campbellton, N.B.

H. W. SHARPE, heretofore acting Division Master Mechanic, Riviere du Loup, Que., has been appointed District Master Mechanic, District 1. Office, Riviere du Loup, Que.

See also Canadian Government Railways.

Michigan Central Rd.—With reference to the appointment of S. D. WILLIAMS, Jr., as Division Engineer, St. Thomas, Ont., vice W. C. Houston, transferred to Jackson, Mich., as announced in our last issue, we were officially advised, Oct. 15, that though he had been appointed as stated, he had not then taken charge of the office, but was still acting Division Engineer, Niles, Mich.

Prince Edward Island Ry.—See Canadian Government Railways.

Southern New England Ry.—R. D. GARNER has been appointed Engineer of Construction. Office, Grosvenor Bldg., Providence, R.I.

Traffic Orders by the Board of Railway Commissioners

Rattan Furniture Rates from British Columbia.

20415. Sept. 24. Re Supplement 24 to Tariff C.R.C., no. W-1713, filed by C.P.R. Co., and effective Sept. 7, increasing rate on rattan furniture from Vancouver and Victoria to points in Manitoba, Ontario, and Quebec; and order 20246, Aug. 30, suspending the effective date of the advanced rates in the said supplement for 30 days from the date of the order. It is ordered that the said order 20246 be rescinded.

C.P.R. Local Standard Passenger Tariff.

20457. Sept. 30.—Re application of C.P.R., under sec. 331 of the Railway Act, for approval of its Local Standard Passenger Tariff L. 48, being C.R.C. no. E 2279, cancelling C.R.C. no. E 6644 and C.R.C. no. W. 38 and supplements thereto. It is ordered that the maximum tolls to be charged for passengers for all distances on C.P.R. lines in Canada now in operation or under construction, as specified in the company's Standard Passenger Tariff C.R.C. no. 2279, Aug. 12, become effective Sept. 1, viz., 3c. a mile east of and including the company's railway between Macleod, Calgary, and Edmonton, Alta., and 4c. a mile west of and including Macleod and Calgary, the said tariff being a consolidation of the company's approved Standard Passenger Tariffs C.R.C. nos. W. 38 and E 664, be approved, subject to the provisions of subsec. 2 of sec. 327, and subsec. 1 of sec. 331 of the Railway Act.

Mill Feed Rates from Lethbridge.

20462. Oct. 2.—Re complaint of A. Robertson, of Keremeos, B.C., that the combination of the Canadian Pacific and Great Northern Railway Companies' local rates now paid on mill feed, in carloads, from Lethbridge to Keremeos, viz., C.P.R., 27c.; G.N.R., 38c.; total, 65c., if routed via Nelson; and C.P.R., 37c.; G.N.R., 27c.; total, 64c., if routed via Grand Forks; as against the rate of 42c. through the United States, hitherto charged, is excessive. It is ordered and declared that the joint tariff of the Alberta Ry. and Irrigation Co. C.R.C. no. 165 is lawfully in effect; and that Supplement 16 thereto, filed by the C.P.R., to take effect Aug. 18, be disallowed. That the Board will be prepared to consider an application for the annulment of the said C.R.C. no. 165 on the publication and filing by the C.P.R. of local and joint tariffs of rates from Lethbridge, and from points on the Alberta Ry. and Irrigation Co.'s line via Lethbridge, which shall not be greater than those shown in the said C.R.C. no. 165, via Coutts, to points in British Columbia on the Great Northern and Canadian Pacific Railways to which the rates of the said C.R.C. no. 165 are now lower than via C.P.R. from Lethbridge, having regard to the provisions of the Railway Act.

Canadian Government Railways

TENDER

SEALED TENDERS addressed to the undersigned and marked on the outside, "Tender, Diversion of Line, North Sydney to Leitches Creek," will be received up to and including Monday, November 10th, 1913, for the construction of a line of Railway from North Sydney to Leitches Creek, N. S.

Plans and specification may be seen at the office of the undersigned at Ottawa, Ont., at the Station Master's Office, North Sydney, N. S., at the Office of the Resident Engineer, at New Glasgow, N. S., and at the Office of the Chief Engineer, Moncton, N. B., where forms of tender may be obtained.

All the conditions of the specification must be complied with.

L. K. JONES,
Assistant Deputy Minister and Secretary
Department of Railways and Canals.
Ottawa, Ont., Oct. 24th, 1913.

Department of Railways and Canals, Canada.

WELLAND SHIP CANAL.

Section No. 5.

NOTICE TO CONTRACTORS.

SEALED TENDERS addressed to the under[illegible] "T[illegible] No. 5, W[illegible] until 12 o'clock noon on Tuesday, November 18th, [illegible]

P[illegible] entered into can be seen on or after this date at the [illegible] Department [illegible] Ottawa, [illegible] the Engineer in Charge, St. Catharines, Ontario.

[illegible] may [illegible]tained from the Department on the payment of the sum of fifty dollars. To bona fide tenderers this amount will be refunded upon the return of the above in good condition.

Parties tendering will be required to accept the [illegible] by the Department of Labour, which schedule will form part of the contract.

Contractors are requested to bear in mind that tenders will not be considered unless made strictly in accordance with the printed forms, and in the case of firms, unless there are attached the actual signature, the nature of the occupation, and place of residence of each member of the firm.

An accepted bank cheque on a chartered bank of Canada for the sum of $100,000.00 made payable to the order of the Minister of Railways and Canals, must accompany each tender, which sum will be forfeited if the party tendering declines entering into contract for the work, at the rates stated in the offer submitted.

The cheque thus sent in will be returned to the respective contractors whose tenders are not accepted.

The cheque of the successful tenderer will be held as security, or part security, for the due fulfilment of the contract to be entered into.

The lowest [illegible] necessarily accepted.

By order,

L. K. JONES,
Assistant Deputy Minister and Secretary
Department of Railways and Canals.
Ottawa, 20th October, 1913.

Newspapers inserting this advertisement without authority from the Department will not be paid for [illegible]

The Commissioners of the Transcontinental Railway

NOTICE TO CONTRACTORS.

Tenders for the Installation or Completion of Electric Wiring System for the N. T. Ry. Car Shops, Transcona, Manitoba.

SEALED TENDERS, addressed to the undersigned and marked on the envelope: "Tender for Electric Wiring System," will be received at the office of The Commissioners of the Transcontinental Railway, at Ottawa, Ontario, until 12 o'clock noon of the 4th day of November, 1913, for the furnishing and installing of the Electric Wiring Systems required in connection with the equipment of the National Transcontinental Railway Car Shops at Transcona, Man., about six miles east of Winnipeg.

Plans may be seen and forms of tender and specifications obtained at the office of Mr. W. J. Press, Mechanical Engineer, Ottawa, Ont., and at the office of Mr. H. H. Pinch, Assistant Engineer, Transcona, Manitoba.

Persons tendering are notified that tenders must be made on the forms supplied by the Commissioners, and that each tender must be signed and sealed by all the parties to the tender, and witnessed, and be accompanied by an accepted cheque on a Chartered Bank of the Dominion of Canada, payable to the order of The Commissioners of the Transcontinental Railway, for a sum equal to five per cent. (5 p.c.) of the amount of the tender.

The cheque deposited by the party whose tender is accepted will be deposited to the credit of the Receiver-General of Canada as security for the due and faithful performance of the contract according to its terms. Cheques deposited by parties whose tenders are rejected will be returned within ten days after the signing of the contract.

The right is reserved to reject any or all tenders.

By Order,

P. E. RYAN,
Secretary
The Commissioners of the Transcontinental Railway.
Dated at Ottawa, October 8, 1913.

Newspapers inserting this advertisement without authority from the Commissioners will not be paid for it.—49048.

Electric Railway Department.

The Proposed Sale of the Toronto Railway to the City.

Following on the recent negotiations between the City and the Toronto Ry. Co. regarding the proposed purchase by the former of the physical assets, franchises, etc., of the Toronto Ry. and its subsidiary company, the Toronto Electric Light Co., and including such portions of the Toronto and York Radial Ry., and Toronto Suburban Ry., as are within the city limits, Mayor Hocken, at a meeting of the City Council, Oct. 13, brought down the reports prepared by B. J. Arnold, Chicago, Ill., assisted by J. W. Moyes, Toronto, regarding the railway portion of the proposal, and R. A. Ross and Co., Montreal, regarding the Toronto Electric Light Co.

In commenting on the report, the Mayor related the history of the negotiations leading up to the engagement of experts to report on the physical assets and the conditions of a tentative agreement, which would form the basis of a definite proposal to submit to the ratepayers for approval or rejection, and also dealt with the condition of affairs in which the city was involved in providing efficient transportation for a large and expanding city, especially in view of the peculiar nature of the terms of the franchise granted to the company, in connection with which there has been continuous litigation for several years, all more or less of an unsatisfactory nature so far as the city is concerned. The situation has to a certain extent been complicated by the construction and operation by the city of three disconnected lines serving outlying portions, each of which is being operated at a loss. The net operating loss on these three lines for the remaining portion of the Toronto Ry. franchise, which expires in 1921, is estimated at $1,341,772.72.

After considerable negotiations, Sir William Mackenzie, President, Toronto Ry., expressed his willingness to arrange for the city to acquire the physical assets of the Toronto Ry. Co., comprising track, substructures and all underground conduit work, overhead trolley, feeder system, rolling stock, including electrical equipment, being all rolling stock in operation, head office property, power house and equipment at Frederick and Front Sts., substations and equipment, storage batteries, carhouses and barns, carbuilding shops, motor equipment shops, warehouse for stores, repair parts in stores, foundry, carpenter shops, stables, and all real estate and other physical assets held by the company and used or intended for use in connection with the railway; the physical assets of the Toronto Electric Light Co., comprising land, wharves and docks, buildings, steam and electric plant, incandescent light plant, storage batteries, overhead and underground lines and feeders, motors, meter boards and equipment, motors, lamps and installations, tools and equipment. To avoid any misunderstanding as to the physical assets proposed to be transferred, it is stated that with respect to the two foregoing companies the following assets are not included:—Stocks, bonds, securities of companies, bills, notes, claims and accounts receivable, monies, and any interest the Toronto Ry. Co. may have in the property known as Scarboro Beach, held by the Scarboro Securities, Ltd.

In addition to the foregoing items which the city may acquire are all cars in course of construction and equipment therefor, and all material on hand for new tracks, overhead construction and extensions, paving the actual cost thereof in addition to the consideration agreed upon; so much of the tracks, substructures, underground and overhead construction apperatining to such tracks as are built upon the streets, roads and highways, except crossings thereof within the present city limits, the property of the Toronto and York Radial Ry. Co., on its several divisions, viz., the Metropolitan division, Toronto and Mimico division, and Toronto and Scarboro division; so much of the tracks, substructures, underground and overhead construction appertaining to such tracks as are built upon the streets, roads and highways, except crossings thereof within the city limits as are the property of the Toronto Suburban Ry. Co., and so much of the light, heat and power wires and poles and appurtenances belonging thereto, the property of the Toronto Suburban Ry. Co., and forming part of the lighting system within the city limits; so much of the franchises of the respective companies as may be necessary to enable the city to operate the assets, tracks, etc., purchased, and to carry on within the city the business appertaining thereto; the Toronto and York Radial Ry. Co. and the Toronto Suburban Ry. Co. shall be granted rights and facilities for connecting their overhead wire and cable lines with the lines and central stations of the Toronto Power Co. and the Toronto and Niagara Power Co., and with their own terminals in the city, for transmitting electricity over the said lines and cables for all purposes, and also the right to erect wires to connect their telephone systems with the said power stations or terminals in the city; the purchase price is to be $30,000,000, which is arrived at by allowing $8,000.000 for the assets, etc., of the Toronto Electric Light Co., and $22,000,000 for those of the Toronto Ry. Co. and other companies mentioned, the amount to be paid as follows:—The city to make an issue of debentures amounting to $30,000,000 with interest at 4½% per annum, payable half yearly, maturing in 30 years, with an adequate sinking fund; these debentures to be specially secured by mortgage of trustees covering the assets acquired, and to be a general obligation of the city, the terms of these debentures and the trust mortgage to be mutually agreed upon; of the purchase price, $8,090,000 is to be paid in cash, and the balance in debentures at par, forming part of the issue mentioned; the city to assume bonds as follows:—Toronto Ry. Co., $3,659,000, secured upon its lines; Toronto Electric Light Co., $1,000,000, secured upon its properties, and Toronto and York Radial Ry. Co., $1,640,000, secured upon its lines, etc., including the portions within the city limits, and to deposit with trustees its debentures to an equal amount to provide for the redemption of these bonds, or for getting them in by exchange, and so far as the portions of the Toronto and York Radial Ry. within the city limits are concerned, so that such portions may be released from their charge, meantime any transfers to be made out subject to such charge, and when so released any balance of debentures to be handed over; the city is to assume and carry out all lighting and power contracts of the Toronto Electric Light Co., and the Toronto Suburban Ry. Co. within the city limits, and all contracts of the Toronto Ry. Co. and Electrical Development Co., which run to Sept. 21, 1921, subject to renewal on the terms of the contract, the city to give three years' notice in writing if it does not desire renewal; also to assume all contracts between the Toronto Electric Light Co. and the Toronto and Niagara Power Co., of Jan. 30, 1903; and after Nov. 13, 1919, being the first period of the contract, the city agrees through the Hydro Electric Commission of Ontario, to purchase from the Toronto and Niagara Power Co. not less than 30,000 horsepower per annum for 30 years from the latter date, under the terms of the existing contract, the power companies agreeing that during such contract they will only sell power in the city, to the city through the Hydro Electric Commission, but nothing contained in this clause shall be construed as to prevent the companies mentioned from supplying power to the railway companies for their purposes; the city will collect arrears and current accounts under the lighting and power contracts, and account to vendors and pay them their share, and will honor passenger tickets outstanding, the Toronto Ry. to redeem from the city at sale prices its honored tickets over the parts of their lines within the city limits; the parts of the radial lines taken over by the city are to be double tracked by the city, standard railway gauge to be adopted so as to permit of the operation of Toronto and York Radial cars thereon, the city to put down a third or composite rail if it desires to operate over these parts in connection with the city system; the radial companies are to have running rights over the portions taken over by the city, including the double tracks laid by the city, upon the wheelage basis for maintenance, and without charge for capital expenditure, and the right to connect the double tracks with the companies' car barns and terminals or property acquired for such purposes, but shall not, except on terms to be agreed upon, have the right to take up local passengers on the lines within the city limits, that is, passengers destined from one point on these lines in the city to another point on these lines in the city; the companies to have the right to carry express and light package freight over these tracks to their present terminals within the city limits, including the necessary property for terminals and station for the Toronto and York Radial Ry., adjacent to the C.P.R. at or near Yonge St., the classes of such express and freight to be settled by the Ontario Railway and Municipal Board; neither the Toronto Ry. Co., nor either of the other companies shall, except under the agreement for running rights, operate railways along streets within the present city limits, and should these limits be extended, the city to have the right to acquire so much of their lines, etc., as may be built upon streets, roads and highways, but not the crossings thereof within the extended limits, and in estimating the value of the lines so acquired compensation to be allowed to the companies for the franchise and for depreciation, if any, similar double tracking and running rights to be provided for as previously mentioned.

It will thus be seen that the city desires to acquire the whole street railway system within the city limits, as at present defined, and also within any future extensions, and in order to do this it has been found necessary to acquire also the assets of the Toronto Electric Light Co., a subsidiary of the railway company, and by so doing the city will be enabled to control the transportation and light and power delivery within the city with some slight reservations on behalf of the power companies concerned. Although the Toronto Ry. Co., should the city carry out the scheme, will maintain its corporate capacity, more or less as a holding concern for other allied concerns, all rights to build and operate railways on any streets within the city limits will be obliterated under the city's agreement to purchase.

The valuation placed on the Toronto Ry. Co.'s physical assets by the experts engaged for the purpose is $9,894,482, and for the intangible assets, consisting chiefly of the franchise rights to operate surface railways exclusively, in Toronto, $10,713,553. The value of those portions of the radial lines within the city limits is placed at $411,447, including $193,649 for an exclusive franchise on a part of Yonge St., and the value of the assets of the Toronto Electric Light Co. is placed at $6,132,754. The actual value thus placed on the total physical assets, which the city desires to take over, is $16,245,034, thus leaving $13,754,966 difference between the value of the physical assets, and the price proposed to pay, viz., $30,000,000, as representing the value of the total intangible assets. So far as the railway proper is concerned, the valuators have estimated the net surplus earnings of the company up to September, 1921, to be worth $10,713,533, based on the present earning capacity, with the operating cost kept to 55% of the gross earnings. It cannot of course be claimed that the city could operate at so low a figure as 55% of the gross earnings, but allowing 65% of the gross earnings for operation, and with the estimated loss on the present civic lines, for the same period, viz., $1,341,772.72, practically the same figure is reached. The remaining difference, apart from $193,649 for the exclusive radial franchise on a part of Yonge St., would therefore represent the value to the city of the goodwill of the Toronto Electric Light Co.'s business, and the extinguishing of competition in the lighting and power business, as well as creating a monopoly of street railway transportation for the city.

Following are the valuation figures as summarized in the report laid before the city council:

In connection with the radial lines within the city limits, the Metropolitan Division of the Toronto and York Radial Ry. is valued at $64,354, and the Toronto and Scarboro Division at $27,300, with $193,649 as the value of the exclusive franchise for operating on a part of Yonge St. The value of the portion of the Toronto Suburban Ry. proposed to be acquired is fixed at $51,144, thus making $20,944,482, the value of the railway properties in question, including physical assets, franchises, etc., and which, added to the value placed on the Toronto Electric Light Co., of $6,132,754, totals, $27,077,236. The value of the Toronto and Mimico Division of the Toronto and York Radial Ry. is not included in the figures above quoted, nor is it dealt with in the valuators' report, as such valuation has already been dealt with by arbitration under the Ontario Railway and Municipal Board, and the value fixed at, approximately, $75,000.

It has been decided to have a report from a firm of accountants on the commercial value of the proposition, and John Mackay and Co. have been engaged for the purpose. H. H. Couzens, General Manager, Toronto Hydro Electric system, has also been instructed to report on the actual utility of the physical assets of the Toronto Electric Light Co., and to what extent they can, with advantage, be incorporated with the civic Hydro Electric system. When these reports are received a special meeting of the council will be called to deal with them.

SUMMARY OF EXHIBITS, TORONTO RAILWAY CO. REPORT.

	Net cost new	Eng. % added	Total	Net present value	Eng. % added	Total	Net cost new	Depreciation	Net present value
	$	$	$	$	$	$	$	$	$
Track	1,668,021.14	250,221.94	1,918,243.08	1,038,700.44	155,805.07	1,194,505.51	1,668,021.14	629,320.70	1,038,700.44
Electrical distribution system	940,692.46	141,103.54	1,081,796.00	790,891.95	118,650.05	909,642.00	940,692.46	149,700.51	790,891.95
Rolling stock	4,529,911.00	226,445.50	4,756,356.50	3,075,644.10	153,782.71	3,229,426.81	4,529,911.00	1,454,266.90	3,075,644.10
Power plant equipment	1,478,685.00	147,867.00	1,626,552.00	1,090,609.00	109,060.00	1,199,669.00	1,478,685.00	388,076.00	1,090,609.00
Shop equipment and tools	163,648.16	8,182.41	171,830.57	104,324.82	5,216.24	109,541.06	163,648.16	59,323.34	104,324.82
Furniture and fixture	16,049.20		16,049.20	12,969.99		12,969.99	16,049.20	3,079.21	12,969.99
Realty and buildings	2,408,974.00		2,408,974.00	2,146,759.00		2,146,759.00	2,408,974.00	262,215.00	2,146,759.00
			11,979,801.35			8,802,513.37			
Legal expenses, carrying charges, incidentals on total at 5%	598,990.07		598,990.07	598,990.07		598,990.07	598,990.07		598,990.07
Bond discount at 5%	628,939.57		628,939.57	167,717.22		167,717.22	628,939.57	461,222.35	167,717.22
Stores	309,773.00	15,489.00	325,262.00	309,773.00	15,489.00	325,262.00	325,262.00		325,262.00
	12,745,683.60	789,309.39	13,532,992.99	9,336,479.59	558,003.07	9,894,482.66	12,759,172.60	3,407,204.01	[illegible]

Recapitulation: Net cost new and engineering organization, etc., added $13,532,992.99; Net present value and engineering organization, etc., added $9,894,482.66; Net depreciation $3,407,204.01.

Report on Proposed Municipal Electric Railways by the Ontario Hydro Electric Power Commission.

The engineers of the Hydro Electric Power Commission of Ontario have prepared a report and estimate of the proposed municipal hydro electric railway for the district north east of Toronto, as requested by the different municipalities in that territory, as mentioned in previous issues of Canadian Railway and Marine World. In May, 1913, the councils of the townships of Scarboro, Markham, Uxbridge, Pickering, Whitby and Reach and some of the towns and villages in that district forwarded resolutions to the Commission requesting a report and estimates on a municipally owned electric railway to connect that district with Toronto. The Commission's engineers were instructed to obtain the necessary information, and prepare estimates showing the traffic that might be expected, the capital cost, operating revenue, and expenses of the proposed line. This has been accomplished most thoroughly, and very detailed information is given in the report.

Briefly speaking, as every point on the proposed line is within 45 miles of Toronto, and the service given by the steam lines is said to be insufficient to meet the requirements for purposes of best development, it is believed that a good portion of the existing traffic might be diverted to the proposed line, which with new traffic that an electric line always develops, is expected to make the project a profitable one. The agricultural section of the country traversed is said to be the equal of any in Ontario, with the exception of from 15 to 20 miles, and is one of the most thickly settled portions of the province. The ability of an electric line to stop at frequent intervals, such as cross roads, would, it is claimed, give it a marked advantage over steam railways with their infrequent stops. The layout of the steam lines radiating from Toronto, makes necessary in many cases a roundabout trip to go a short distance across country, which the electric line proposes to ameliorate in several sections of the district to be traversed.

A survey party was organized to run preliminary lines, and from data secured, it was decided to make a study of three different routes from the north east boundary of Toronto to Unionville. From this point both easterly and northerly, the route was more or less fixed by the centres of population, and the contour of the country. The surveyed lines are all shown on the accompanying plan, but these lines were only run for trial and estimating purposes, and may be deviated from in the event of actual construction.

Of the three parallel routes at the Toronto end, the easterly one was run to pass through the centre of Scarboro Tp., but was found unfavorable for actual construction, the middle route offering almost equal service, with a much lower construction cost. As it is anticipated that a considerable portion of the district traversed by the westerly line will be annexed by Toronto within the near future, and it is controlled by three large estate companies, the financing of their portion would be simplified. The construction of this line would be less than either of the others, and while half a mile longer, it brings the line 1½ miles nearer the centre of the city. Estimates on the westerly and middle routes were prepared, but in view of the disadvantages of the easterly route, it was not considered in the report.

From Toronto north to the height of land at Goodwood, there is a difference in elevation of 700 ft., giving an average ascending grade of 0.5% that cannot be avoided. All grades have been kept below 2%, with a maximum curvature of 5 degrees. The soil throughout the entire district, with the exception of a sandy stretch in Uxbridge Tp., is a light loam, with gravel present in sufficient quantities near the trial lines to ensure an ample and cheap supply of ballast. The estimates on track construction have been prepared on a 14ft. roadbed, 80 lb. rails, 6 by 8 in. by 8 ft. cedar ties spaced 3,000 to the mile, gravel ballast, 8 bar woven wire fence with gates, cattle guards, etc.

All culverts have been designed to carry

100 ton locomotives, to meet the requirements of intercommunication with steam lines. Plate girder bridges on concrete abutments would be used in most cases, but some steel viaducts would be required. Following the practice of the steam lines in the district, all overhead railway crossings were estimated on crossing two tracks. Half interlocking plants would be used for the protection of all grade crossings, to be operated by such employes as would have other duties in the vicinity. These plants would consist of a small central tower with interlocking machine controlling home and distant signals on the steam lines, and derails and home signals on the electric line. The electric line signals would be located close to the crossing, to be conveniently operated by conductors when the regular attendants were not on duty.

Routes of Proposed Municipal Hydro Electric Lines from Toronto

The estimates include the cost of brick passenger and freight stations at important towns, and shelters, with small loading platforms, at the most important road crossings. It is proposed to have a car barn and shops of brick construction located near Markham, at the junction of the Uxbridge and Port Perry lines, and galvanized iron shelters on steel frames and concrete footings at termini, for housing cars over night. Sub stations would be provided by fireproof station additions at Markham and Brooklin.

The 2,400 volt d. c. system has been used in figuring the cost of the electrical equipment, but the layout and traffic would give very similar results with single phase a. c., or 1,200 volt d. c. These systems, while more expensive in first cost and operating expenses than the lower voltage d. c. systems, for short lines, are necessary for a line of this type, in order that holiday traffic may be properly handled without the capital cost being raised to an amount that would cause unusually heavy expenses for normal operation. These systems have also been chosen so that the line may be able to take care of freight traffic and be extended short distances without installing additional sub station equipment and trolley feeders. Should it be decided to construct only a short portion of the complete line, it would be possible to use the low voltage d. c. until such time as extensions warrant the system figured on. The single catenary bracket arm type of construction has been the basis of computation, with 35 ft. wooden poles spaced at 150 ft. intervals, with 7-16 in. steel messenger, and 4-0 grooved copper trolley wires.

Heavy double truck cars would be used for the through service, with lighter cars on the suburban traffic. The car equipment would be quadruple 100 or 125 h. p. motors, hot water heaters, automatic air brakes, pantograph trolleys and double end multiple control. The cars would have smoking and baggage compartments in addition to the passenger section. Main line cars would be capable of operating up to 60 m. p. h., with schedule speeds of from 25 to 35 m. p. h., the stops varying from 4 per mile to one every 2 miles. Trailer cars would be operated on holidays and during the rush hours on a reduced schedule. Express cars for milk and light freight traffic would be equipped with large motors, capable of shifting or hauling freight cars short distances. The locomotives considered would weigh up to 60 tons, and would be capable of hauling from 6 to 20 freight cars, or 3 or 4 passenger trailer cars for excursion business. Quadruple 100 or 150 h. p. motors with multiple control would be the probable equipment. Standard steam line freight cars would be required for feight and express business, and it is planned to have sidings between stations, so locating the loading and unloading points as to reduce team haulage on large shipments. ,

In estimating the probable capital costs, the cost of the right of way was obtained from information obtained in the field. It is said that the costs will probably be less than estimated, as several owners have expressed a willingness to give a free right of way through their property. Information on the cost of bridges over grade and level railway crossings, signalling, interlocking plants, etc., was obtained from the present railways in the district. Sufficient data and costs were also obtained from manufacturers of bridges, rails and track fittings, interlocking plants, cars, electrical equipment for rolling stock and sub stations, etc., to enable accurate figures to be prepared on the capital cost of the line. Plans and profiles have been prepared of the lines surveyed, and the quantities of grading, draining, etc., figured for the different sections. To all this has been added an overhead charge of 7% to cover engineering, interest during construction, and bond discount.

The total revenue of the proposed line has been divided between passenger, freight, milk, express and mail business, and the sum deduced under each of these headings has been checked with statistics obtained from electric lines operating through a somewhat similar territory. The similarly situated electric lines of which data are given are the Brantford and Hamilton Electric Ry., Chatham, Wallaceburg and Lake Erie Ry., Hamilton Radial Electric Ry., Niagara, St. Catharines and Toronto Ry., Toronto and York Radial Ry., and Windsor, Essex and Lake Shore Rapid Ry. Of these several lines, statistics for 1912 are tabulated: Showing length, passenger number and revenue, freight tonnage and revenue, express revenue, advertising revenue, and operating expenses. From these figures, some interesting comparisons can be drawn.

As a further comparison of probable revenue, the estimated revenue obtained by the steam lines operating in the Toronto northeastern territory from the centres of population along the lines has been obtained from reliable sources, for the different classes of traffic that are to be handled. The places considered are Agincourt, Milliken, Unionville, Markham, Stouffville, Uxbridge, Locust Hill, Brooklin, Myrtle and Port Perry, and where the place is served by more than the one line, separate estimates are tabulated. From these several centres, the estimated total passenger revenue is $92,500; milk, $16,300; freight, $340,000; express, $21,000; with a total combined revenue obtained by the steam lines from this territory of $469,800. Basing the estimated revenue on the conditions existing in similarly situated electric railway territory, using the estimated revenue of the steam lines to obtain a detailed analysis of the probable revenue, the following table has been compiled:

Passenger revenue 900,000 at 4 cts.	$36,000	
Passenger revenue—600,000 at 40 cts.	240,000	
		$276,000
Freight revenue—60,000 tons at $2.25		135,000
Milk Revenue—150,000 cans at 20 cts.		30,000
Express and mail revenue		8,000
Advertising revenue		1,500
Total revenue from operation		$450,000

Further checks on the estimated traffic that might be expected from the district were made. For the passenger traffic, a study of interurban lines, on the basis of a return per head, shows that this varies under local conditions from $8 to $14 per head. Using the 1911 Dominion census as a base, in those portions of the townships of York, Scarboro, Markham, Uxbridge, Pickering, Whitby and Reach affected by the proposed lines, and in the towns of Stouffville, Markham, Uxbridge, Port Perry and Whitby, there is an estimated tributary population of 18,219, with an average population per square mile of territory affected in the country districts of 63. Taking into consideration the local conditions and average width of territory served, it has been estimated that the per capita return would be $12, which for the 18,219 tributary population, would give a passenger return of $219,000. To this must be added the suburban receipts, which for an estimated number of 900,000 at 4 cts., would give $36,000, bringing the passenger total to $255,000. As these figures are based on the present population, it is a safe assumption that the passenger revenue on the completion of the line would be as estimated.

The estimated freight traffic of the steam lines was obtained from reliable sources. From this, and from data obtained in other towns surrounding the city, it was ascertained that more than one half the freight revenue within a radius of 50 miles of Toronto, results from traffic to and from the city. An average freight rate between Toronto and the Markham-Stouffville district would be 17 cts. per 100 lbs., so that the estimated average rate of 11 cts. per 100 lbs. should be conservative. It is assumed that a subsidiary cartage company would be formed in Toronto to handle the city deliveries, and considering the frequency and rapidity of an electric service specializing in local business, it is believed that the proposed line could secure at least one half the present freight business, as well as developing new business.

In checking up the milk business, the inadequacy of the steam lines in being able to pick up milk at frequent points, makes it appear certain that an electric line, with collection points at almost every cross road would be able to get a lot of new business as well as much of the present.

The big difference between the estimated express revenues of the present steam and proposd electric lines, is accounted for by the consideration given to the fact that a large amount of the steam railway express traffic is for service rendered outside the Toronto district, for which the electric line could not compete. Consideration is also given to the fact that the fast schedule possible on electric lines tends to reduce the express traffic, the latter going as freight, which has nearly as quick a schedule as observations on other lines have shown.

In estimating the operating expenses, the number of car crews necessary to give the service desired, was estimated from train sheets prepared on the schedule planned. The number of station and repair men was determined from the requirements of other steam and electric lines. The cost of maintenance and repairs of track and rolling stock is more or less standard. All operating expenses were deduced from comparisons with roads operating under similar conditions. To cover annual charges of interest and sinking fund on the cost of the line, 6.3% of the capital investment has been added to the other operating expenses.

In order to examine the project with regard to the effect of adding to or reducing the length of the line, five separate estimates have been made, considering primarily the complete line, and this line with certain sections omitted.

Scheme 1. This is the main estimate, including the following lines: Toronto to Markham, 16 miles; Markham to Uxbridge, 20 miles; Markham to Brooklin, 16 miles, and Port Perry to Whitby, 19 miles; total, 71 miles.

Scheme 2. This considers the same line as scheme 1 with the exception of the line between Brooklin and Whitby. Total, 64 miles.

Scheme 3. This considers the line from Toronto through Markham to Uxbridge, without connection to Brooklin, Whitby or Port Perry. Total, 36 miles.

Scheme 4. This considers a line from Toronto through Markham to Stouffville only. Total, 24 miles.

Scheme 5. This considers a line from Toronto to Markham only. Total, 16 miles.

Provision has been made in the shorter schemes for extending the system at some future date to the full 71 miles, and where possible, portions of the ultimate equipment are figured upon, but this has not always been possible. In scheme 5, the 16 miles is planned to be operated at least partially by long distance equipment, necessarily giving a proportionately higher overhead operating cost than would result if the equipment were selected for the shorter line only.

In estimating the effect of each section of the road on the operating revenue, credit was given to each for the travel between sections that each would induce, recognition being given to the fact that the further a person resides from the city, the less frequent will it be used by him. The following gives the division of the 600,000 passengers among the various sections:

	Passengers.
Toronto-Markham	[illegible]
Markham-Stouffville	[illegible]
Stouffville-Uxbridge	88,500
Markham-Port Perry	[illegible]
Brooklin-Whitby	[illegible]
Total	[illegible]

In the table below are shown the net results of the detailed estimates on the five schemes, for capital cost, operating revenue and operating expenses:

Scheme	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Mileage	71	64	36	[illegible]	[illegible]
Capital cost, total	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Per mile	[illegible]	35,800	34,800	[illegible]	[illegible]
Operating revenue	450,500	446,200	300,800	[illegible]	137,500
Operating expenses*	396,660	[illegible]	[illegible]	[illegible]	[illegible]
Surplus	[illegible]	[illegible]	68,020	[illegible]	[illegible]
Deficit	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

* Including interest and sinking fund.

In order to compete with a service which the steam lines might feel forced to give under competition, it was necessary to figure on the quadruple 100 to 125 h. p. motor equipment. With these motors, it would be possible to travel between Toronto and Uxbridge in 1½ hour, and to Port Perry, some 8 miles further, in from 10 to 15 minutes more time because of the fewer stops. The present analysis does not make provision for limited cars, as the estimated traffic between centres would n t warrant their use, but the same equipment might be used for this service if it should be found advisable to inaugurate such a service.

A study of the accompanying map will show that the section east and north of Brougham and Greenwood is served by the main lines of three steam railways and one electric railway, and on this account the municipalities within this district may not see the necessity of the enterprise. This will not affect the scheme greatly, as an examination of the estimated revenue from the section between Brougham, Brooklin, Myrtle and Whitby has purposely been made small, as the traffic developed must be divided between five other lines that are in a position to give direct and fast service to the city. The bulk of the electric traffic would be local, with small fares. The township of Whitby [illegible] of the district outlined, has requested a report [illegible] ed above not desire the service.

If all the municipalities that requested the report desire to have the line constructed through their districts, the line as laid forth on the accompanying map is recommended [illegible] in the event of any changes being desired by reason of the section to the east and south of Brougham not desiring to be served, there are two alternative plans of connecting the Uxbridge and Port Perry districts: First. Toronto to Unionville, Unionville to the vicinity of Cashel and Almira, north west from Cashel to Newmarket, eastward from Cashel through Stouffville and Altoona to Glen Major, Glen Major to Uxbridge, Glen Major to Port Perry, and Unionville to Locust Hill. Second. Toronto to Markham, Markham to Stouffville to Newmarket, Markham to Glen Major via Locust Hill and Greenwood, Glen Major to Uxbridge, and Glen Major to Port Perry.

To build a line as set forth in the report, with the omission of the Brooklin-Whitby section, would mean a line 64 miles long, whereas either of the lines just outlined would only be from 55 to 60 miles long. The new routes would also pass through a greater section of unserved territory, and probably cross the height of land to Uxbridge and Port Perry at a lower elevation.

The report concludes by stating that schemes 1, 2 or 3 would be the only ones that could be profitably built, as the revenue estimated for the shorter schemes 4 and 5 appears too small to warrant the outlay.

The lines as outlined are estimated on a Toronto terminal in the northeastern section of the city, but it is desired that at some time, a terminal be secured in the heart of the city, and with that object in view, it is the intention to approach the city authorities. It has been suggested that the proposed line use a street to the north of and parallel to Danforth Road to the Don ravine, crossing the latter on the lower deck of the new bridge projected at that point, reaching the centre of the city by way of Ontario, Gerrard, Jarvis and Mutual Sts., giving a route close to the business and financial districts, also providing access to the market districts at the lower end of Jarvis St.

The report is followed by complete detailed estimates of the five schemes, which have of necessity been omitted from this summary from lack of space.

The report was prepared by W. G. Hewson, Assistant Engineer to the Commission, under the direction of F. A. Gaby, Chief Engineer, to whom we are indebted for the data on which this article is based.

The Municipal Railway Tax Association is the name of an organization consisting of a union of counties and townships in Ontario, which interviewed the Provincial Government recently with a view to effecting a change in the matter of taxation of railways within the province. It is suggested that the assessment act be amended to provide for the assessment at a specific value per mile of the structures, substructures, rails, ties, poles and other property.

Trailer Operation by Montreal Tramways Company.

Traffic on St. Catherine St., the Montreal Tramways Co.'s main cross town line, has become so great that it was recently realized that to increase its density by the addition of more individual units would only increase the congestion and not relieve the situation. The St. Catherine St. cars, through the main section of the district, operate on an average headway of a minute and a half, with additional radiating lines using the tracks through a section of the more congested district. The traffic on this through line is such that at all hours of the day the traffic density is very uniform, which has been an important factor in evolving a solution of the problem of providing additional accommodation for the overtaxed line. Trailer operation has been used with success in other cities in Canada, principally Toronto, but the system adopted in the latter employs trailer cars only during the rush hours, the trailers being attached at the car shed just prior to the period of maximum traffic, and removed immediately after. This has the objection of congesting traffic at the car shed.

Consideration of the conditions existing on St. Catherine St. led the General Manager, J. E. Hutcheson, to the conclusion that not only would intermittent trailer operation not be satisfactory, but the uniformity of the traffic density during all hours of the day would make advisable the use of trailers from early morning until late at night, leaving them in operation all day. The congestion at the car sheds, which reaches its maximum during the rush hours, will be relieved to this extent. The steady use of trailers will eliminate one of the principal objections to trailer operation.

In adopting trailer operation, it was decided to have the trailer design follow that of the motor car as closely as possible, resulting in the combination shown herewith. The distinctive type of car most recently developed in Montreal was described in detail in Canadian Railway and Marine World for Mar., 1912. This is the model practically followed in all subsequent designs, there being more recent changes that do not involve any radical departure in the car design such as occurred between that design and its predecessors. A small order of cars delivered to the company early this year departed from the fundamental design by using a monitor instead of a decked roof. This has been followed in these new cars, and forms one of principal points of difference in design.

In the original cars of this design there were 10 cross seats, arranged along a central aisle, near the centre of the car. This has been found to cramp the interior capacity of the car by bottling all the standing passengers in the rear end during the rush hours. In consequence, many of these cars had the cross seats rearranged so as to give a very short longitudinal seat at the forward end of the car, with long seats, extending nearly half the length of the car at the rear end, increasing the useable standing room materially. This change has been retained in motor trailer cars.

A novel departure in the design of these cars has been made in having motor and trailer of practically identical design, the only difference between the two being in the vestibule design. In both the body length is 32¼ ft., with the overall length of the motor car 44¾ ft., and of the trailer 44 ft. The width over sills of both is 8¼ ft., and overall 8 ft. 4¾ ins. The height to car floor from rail is 36½ ins., height overall, 11 ft. 2½ ins. The trucks in both are at 20 ft. 8 ins. centres.

Reference to the accompanying illustration will show that the motor and trailer are of almost identically similar arrangements, the trailer being the reverse of the motor. The reason for this is apparent. For centralizing the control, it was desirable to have the entrances to both cars as close together as practicable, and this has been secured in this design by having the entrance at the rear of the motor and at the front end of the trailer, both entrances within view of the forward conductor.

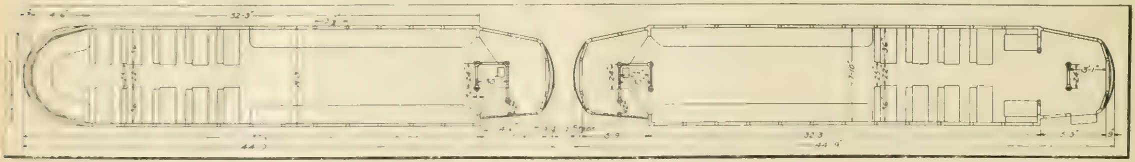
The motorman's platform of the new cars is very nearly the same as formerly, with the exception that instead of the partition separating him from the back portion of the front vestibule, in the absence of the front bulkhead dispensed with in the former design, there is only a guard rail separating his section from the remainder of the front vestibule. The front door is of the folding type, controlled by the motorman as in the former cars.

The rear vestibule is shorter by about 2 ft. than formerly, largely made possible by the elimination of the back bulkhead. This rear vestibule of the motor is similar to the front vestibule of the trailer. The conductor's railing is similarly located to the former design, but in order to have the interior of the car visible to the conductor from his stand, in order to secure the full benefit of the bulkhead removal, the floor of the vestibule at the conductor's stand is raised to that of the car body from the 28 in. level of the vestibule. The shortening of the vestibule has necessitated the removal of the rear rail behind which smoking passengers were allowed to stand.

The conductor's vestibules of both motor and trailer have double folding doors, one each for entrance and exit respectively, the former being that nearest the car end. These double doors are controlled from swing handles in the rail in front of his stand. The steps for the vestibule fold and operate in unison with the car doors, operated by the conductor.

The front end of the trailer is the only entry and exit end, the rear end being blind. The longitudinal seats in the front end of the trailer are slightly longer than in the motor, setting the cross seats back in the car to the rear of the body. The rear vestibule end is on a level with that of the car body and is shorter than at the other end. This end is rounded off, and contains a circular seat, giving an increased seating capacity over the motor by that amount.

In the preliminary description of these cars in the last issue of Canadian Railway and Marine World, it was explained that while the underframing of the cars will be steel, the bodies will be of wood construction, sheathed in steel. The interior trim will be cherry. Among the special equipment are the following:—Cables, conduits and junction boxes, gears and pinions, and motors, Westinghouse; couplers, Tomlinson; destination signs, Keystone. Delivery of the 25 motor cars and 25 trailers included in the order is expected in December. We are indebted to E. Blair, Superintendent of Rolling Stock, M.T. Co., for the information on which this article is based.



Motor and Trailer Car for Operation by Montreal Tramways Company.

Double Deck Car Barn for British Columbia Electric Railway.

The Vancouver City Council, Oct. 7, authorized the drawing up of an agreement with the B. C. E. R. Co. relative to the building of a double deck car barn on Quebec St., between 13th and 14th Avenues. The lower deck will have an entrance from Main St., and the entrance to the upper deck will be from Quebec Ave. The estimated cost of the building is $300,000.

Referring to the project the Vancouver World says: The company has two barns of a temporary type on the north half of the block. The new car barn will take up the entire south half and be of the double deck or two story type, entrance to the lower floor being made from Main St., and to the upper story from Quebec St., and to the possible by reason of the difference in grades of the two streets. The new barn will have a frontage of 132 ft. on Main and Quebec Sts., and extend along Fourteenth Ave. for over 300 ft. On Main St. the height will upper story from Quebec St., this being The estimated cost of over $300,000 for an open structure of this size may seem somewhat large, but the company's engineers state that it is intended to have the building of a permanent and thoroughly fireproof type, the reinforced concrete type of construction being probably followed. The barn will be 45 feet back from the property line on either street, thus making it possible for a considerable portion of the entrance trackage to be located on the company's property. The elevations on the two streets will be of an ornamental character.

It is expected that work on the barn will be started as soon as the agreement is signed.

Traffic Regulation in Halifax.

The Halifax, N.S., City Council has added the following regulation to the city ordinance relating to streets:

"OVERTAKING TRAM CARS."

"56A. The driver of every vehicle, including a motor vehicle, coming up with or overtaking any tram car, and intending to pass on the left side thereof shall, if the tram car is at a standstill or about to come to a standstill or stop, bring his vehicle to a standstill in the rear of said tram car until after the tram car is again in motion."

Regina Municipal Railway Finances.

At a meeting of the Street Railway Committee of the Regina, Sask., City Council held Sept. 20, upon consideration of the accounts of the municipal railway for the eight months ended Aug. 30, it was decided to adopt certain altered methods of bookkeeping. In accordance with these recommendations the City Treasurer and City Auditor prepared a new statement, which was submitted to the Committee, Oct. 4. They add that while the original statement, which has not been published, was a certified one, the present statement, although the operating accounts are the same, is not. The statement is as follows:—

Income.	
Fares	$113,022.50
Advertising	1,840.79
Miscellaneous	1,029.41
	$115,892.78
Expenditure.	
Maintenance of way and structure	$3,573.63
Maintenance of rolling stock	4,327.74
Conducting transportation	56,135.30
Power	29,729.80
Salaries, insurance and miscellaneous	8,649.34
	$102,015 81
Surplus of operation carried forward	13,276.97
	$115,892.78
Income.	
Surplus on operation brought forward	$13,276.97
Interest on monthly capital credit balances from Jan. 1 to Aug. 31	4,936.93
	$18,213.90
Deficit after providing for capital charges	$31,872.34
	$50,086.24
Expenditure.	
Capital expenditure to be provided out of revenue, debenture and consolidated stock services.	
Proportion of interest due:	
Jan. 1, 1913	$ 9,750.00
Jan. 1, 1914	23,500.00
July 1, 1913	9,750.00
(Provided for in revised estimates approved by Council.)	
Sinking Fund:	
Proportion of contribution for 1913	13,145.08
	$56,145 08
Deduct amount to be charged against property sales receipts, 1912	9,750.00
	$46,395.08
Interest for eight months at 6% on $92,278, being amount expended on construction out of property sales receipts	3,691.16
	$50,086.24

It shows the road to have now a deficit of $31,872 34, which is slightly more than $10,000 less than in the Auditor's certified report.

Windsor, Essex and Lake Shore Rapid Railway Annual Meeting.

The report presented at the annual meeting at Windsor, Ont., Oct. 9, showed a gross revenue for the year ended June 30, of $147,813.39, with operating expenses of $82,991.22, leaving $64,822.17 as net operating revenue. Taxes were $1,871.31, interest on bonds, $37,500 and other interest $17,696.19, leaving a net income of $7,837.37.

A. Eastman, heretofore General Manager, was elected a director, the board for the current year being constituted as follows:—President, W. C. Crawford, Tilbury, Ont.; Vice President and General Manager, A. Eastman; Second Vice President, John P. Pigott, Chatham, Ont.; Secretary, W. R. Phillimore, Chatham, Ont.; Treasurer, J. W. McCall, Toronto; other director, E. G. Stevenson, Toronto. J. T. Baird, of Kingsville, Ont. has been appointed Assistant Secretary Treasurer.

The same interests have organized the Mettawas Co., Ltd., to build a summer hotel at a cost of about $20,000. Its directors are W. C. Crawford, President; A. Eastman, Vice President and General Manager; J. L. Baird, Secretary Treasurer.

Large Single Truck Cars for Toronto Railway.

The Toronto Ry. built in its shops, and has had in use in regular service since the middle of the summer, a single truck car that, in carrying capacity and size, in all probability exceeds anything ever built in Canada. M. Power, Master Car Builder, having seen a non parallel axle truck, as made in the United States, prevailed upon the management to have a single truck car built, utilizing this truck, as, by its means, a much longer body might be employed. This was done, a single car being built for experimental purposes.

Essentially the car is in almost all particulars the same as the company's latest double truck cars, the body being an almost exact duplicate in design and size, the only differences being in making the platforms at each end slightly shorter, with the space between the cross seats at the end, when used as an open car, closer together than in the double track car. These changes shorten the car slightly, without affecting the seating capacity, making possible a double truck car body on a single truck.

The overall car length is 40 ft., made up of a body length of 29 ft., 5 ft. platforms at each end, and 6 in. bumpers. The overall width is 7 ft. 11 ins. The body contains 14 cross seats, ranged in pairs, back to back, at 4 ft. 2 in. centres, giving a seating capacity of 70. The truck wheels are at 12 ft. centres, and each pair of wheels has a G80 motor, operated from a K10 controller. The truck is equipped with standard air brake apparatus. The car weight complete is 17½ tons.

This car has proved its abilities in service to date, riding very smoothly, and taking sharp curves without trouble. Its experimental use in regular service is to be continued through the winter to demonstrate its worth under those conditions, and if its operation is satisfactory, it will doubtless be followed by additional cars of the same type.

Electric Railway Finance, Meetings, Etc.

British Columbia Electric Ry. and Allied Companies.—Gross earnings for August, $770,628; operating expenses, maintenance, etc., $566,541; net income, $204,087, against $675,272 gross earnings; $480,341 operating expenses, maintenance, etc.; $194,931 net income for Aug., 1912. Aggregate gross earnings for two months ended Aug. 31, $1.526.571; net earnings $410,083, against $1.325.517 aggregate gross earnings; $376,899 net earnings, for same period 1912.

A prospectus was issued in London, Eng., recently offering £650,000 4½% perpetual guaranteed deventure stock of the Vancouver Power Co., Ltd., guaranteed unconditionally as to principal and interest by the B. C. Electric Ry. Co., and ranking identically, when fully paid, after Jan. 9, 1914, with similar stock quoted at the date of the prospectus at 92 to 94. The price of issue was 88.

A resolution was passed by the Vancouver City Council, Oct. 9, that overtures be made to the company, with a view to purchasing the lines in the city. The proposition is of a general character, and does not disclose any basis of negotiation.

Cape Breton Electric Co.—Gross earnings for August, $33,454.18; operating expenses and taxes, $17,299.94; net earnings, $16,154.24; interest charges, $4,891.67; balance, $11,262.57; bond sinking and improvement funds, $1,190; net balance, $10,072.57, against $31,598.38 gross earnings; $16,100.77 operating expenses; $15,497.61 net earnings; $4,495.83 interest charges; $11,001.78 balance; $1,206.67 bond sinking and improvement funds; $9,795.11 net balance, for Aug., 1912.

Grand Valley Ry.—Brantford St. Ry.—An adjourned meeting of shareholders was called for Oct. 31, to consider a report of a special committee. It is said that the committee decided to recommend that an appeal be made against the recent judgment as to the Brantford St. Ry., and that no offer for the settlement of the company's affairs with the city of Brantford be made.

Halifax Electric Tramways Co.—The Nova Scotia Public Utilities Commission has decided that there is no reason why the company should not pay off its bond issue by the issue of shares as proposed, but it decided not to grant the application to issue $600,000 new capital, on the ground that sufficient evidence had not been produced as to the propriety of the proposed method of financing.

Lethbridge Municipal Ry.—Earnings for September, $4,675; and for nine months ended Sept. 30, $44,242.02. Number of passengers carried in September, 112,266.

Montreal and Southern Counties Ry.—Following are the officers and directors elected for the current year at the recent annual meeting:—President, W. Wainwright; Vice President and Treasurer, F. Scott; Secretary, J. A. Yates; other directors, W. H. Biggar, K.C., and W. H. Ardley. W. B. Powell is General Manager.

Montreal Tramways Co.—The second call of $10 a share upon the new stock issued April 15 is due Nov. 3.

Montreal Tramways Co.—There has been listed on the New York stock exchange, $13,335,000 of first and refunding 30-year 5% collateral trust notes, series A, falling due in 1941.

Regina Municipal Ry.—Passenger receipts for Sept., $17,950.65. The number of passengers carried was 439,993, and including transfers, 502,898.

Toronto Ry., Toronto and York Radial Ry., and allied companies.—Gross earnings for August, $850,222; operating expenses, maintenance, etc., $411,300; net earnings, $438,922, against $727,925 gross earnings; $325,519 operating expenses, maintenance, etc.; $402,406 net earnings, for Aug., 1912. Aggregate gross earnings for eight months ended Aug. 31, $6,317,674; net earnings, $3,098,367, against $5,453,100 aggregate gross earnings; $2,821,327 net earnings, for same period 1912.

Gross earnings for Toronto Ry. for September, were $549,859.35, against $496,359.70 for Sept., 1912. The percentage paid to the City in Sept. was $43,988.75, and in Sept., 1912, $39,788.78.

Windsor, Essex and Lake Shore Rapid Ry.—The annual meeting was held at Windsor, Ont., Oct. 10. Following are the officers and directors for the current year:—President, W. C. Crawford; First Vice President and General Manager, Albert Eastman; Second Vice President, John Piggott; Secretary, W. R. Philmore; Treasurer, J. W. McCall; other directors, E. G. Stevenson and W. T. Piggott; Assistant Secretary-Treasurer, J. L. Baird.

Winnipeg Electric Ry.—Gross earnings for August, $340,507; operating expenses, $184,335; net earnings, $156,172, against $303,764 gross earnings; $162,431 operating expenses; $141,333 net earnings for Aug., 1912. Aggregate gross earnings for eight months ended Aug. 31, $2,649,702; net earnings, $1,186,294, against $2,427,830 aggregate gross earnings; $1,133,895 net earnings for same period 1912

Electric Railway Projects, Construction, Betterments, Etc.

British Columbia Electric Ry.—We are officially advised that the company has not entered into any negotiations with the Great Northern Ry., for the purchase of the abandoned right of way of the Cloverdale-Blaine line, as recently reported in daily papers.

The extension from Victoria Road to Joyce Road, on Kingsway, Vancouver, 1.5 miles, was opened for traffic, Oct. 1. (Oct., pg. 494.)

Dominion Power and Transmission Co.—An announcement is reported to have been made, Oct. 21, by W. C. Hawkins, Managing Director, that work will be started as soon as possible on the construction of a steam power plant on the site of the old power plant on Guise St., Hamilton, that the new plant will be laid out to generate 27,000 h. p., that it will cost $1,350,000, and that provision will be made so that additional units can be added so as to permit the production of 90,000 h. p. The cost of the fully completed plant is estimated at $3,500,000. Plans have been completed, we are officially advised, for the erection of sheds to be placed on the same location as those which were burned in Hamilton some months ago. The estimated cost is $15,000, and bids for the work have been asked.

We are also advised that nothing further has been done in regard to the projected extension of the Hamilton and Brantford Ry. to Galt, Ont. (July, pg. 344.)

Edmonton Interurban Ry.—Press reports stated recently that it was expected to start a car service on the first section of this line from Edmonton to St. Albert, Alta., early in October. We have no information that the line has been opened for traffic. (Oct., pg. 494.)

London, Grand Bend and Stratford Ry.—Press reports state that an intimation has been given to the London, Ont., City Council that if the city will guarantee bonds for $1,000,000 there will be no difficulty in finding the capital to build the lines proposed, and an additional one to Sarnia.

The lines proposed are: London to Bryanstown, Granton, Woodham, St. Marys, Mitchell and Stratford, looping back to London; London to Ailsa Craig, Parkhill, Grand Bend, Dashwood and Goderich. These are included in the proposed charter of the L., G.B. and S. Ry., and the third line, for which there is a charter in existence would serve London, Lobo, Coldstream, Strathroy, Arkona, Forest and Sarnia. (Oct., pg. 494.)

Medicine Hat Tramways, Ltd.—We are officially advised that when construction is started on the electric railway in Medicine Hat, Alta., early in 1914, it will be in charge of J. B. D'Aeth of the Montreal Engineering Co.'s staff as Superintendent of Construction. (Oct., pg. 494.)

Melita, Man.—The bylaw passed by the town of Melita grants to R. E. Denny, Brandon, Man., a franchise for 30 years for a lighting, heating and power plant, a waterworks system, and a street railway system. The principal reason for which the bylaw was passed was for the purpose of obtaining light, as there are good indications of natural gas in the vicinity. Mr. Denny proposed to make tests, and to install a lighting system, and the other franchises were included. It is not expected that anything will be done about waterworks or a street railway for some years. (Oct., pg. 494.)

Montreal and Southern Counties Ry.—The Montreal City Council has passed a resolu- on granting the company permission to ex- d its car line across McGill St., east on ville Square to St. Peter St., and north on St. Peter St. to Youville Square, and thence west again on the Square to McGill St.

The Board of Railway Commissioners has authorized the opening for traffic of the electrified portion of the Central Vermont Ry. between Richelieu and Marieville, Que., and has given the M. & S.C.R. permission to use the C.V.R. station yards, etc., between these points. The distance from the terminus in McGill St., Montreal, to Marieville is 24 miles. The completion of the line from Marieville to St. Cesaire is near at hand and it is expected to have the line ready for operation by the end of the year.

Contracts are reported let for the building of a bridge across the Yamaska River on the St. Cesaire extension. It is said that the concrete substructure will consist of four piers and two abutments, which will be put in by John Ross, Montreal, and the steel work will be erected by the Dominion Bridge Co. It is reported that a contract has been let to Ross and McComb for grading and other work on the extension of the line through Granby, Que. It is expected that the entire line will be completed into Granby early in the summer of 1914.

Tenders are being asked for the erection of a power substation at Rougemont. (Oct., pg. 494.)

Montreal Tramways Co.—A press report states that the M.T. Co. proposes at an early date to open negotiations with the Montreal City Council with regard to the construction of underground lines in the city, which it has power to build. The company's franchise for surface lines in the city has about nine years to run. It is stated that the proposed underground lines would be built so as to relieve congestion on the surface lines, and to give accommodation to outside areas which at present are not adequately served. It is further stated that the double fare question, the snow removing difficulty, and differences about street paving would be taken up during the proposed negotiations.

J. E. Hutcheson, General Manager, made a statement as to the work in progress on the lines, Oct. 18. He is reported to have said that in the early part of the year $3,750,000 had been appropriated for betterments. Of this $3,000,000 has already been expended. Since the work started seven miles of new track have been laid, and 20 miles of track renewed. On the renewed track the old 87 lb. steel has been replaced with 116 lb. steel. There have been other improvements carried out on the lines, and the work of betterment will be carried on as long as the weather will permit. (Oct. pg. 494.)

Morrisburg and Ottawa Electric Ry.—The annual meeting of shareholders was held at Ottawa Oct. 13, when it was reported that $20,000 had been expended on surveys, etc., during the year; that there was $40,000 on hand, and $100,000 immediately available for construction. About 25% of the arrears on calls had been paid by the shareholders. The President stated that the company's affairs were progressing satisfactorily and that construction had actually been started. Following are the officers and directors for the current year: President, J. G. Kilt; Vice President, R. J. Biggar; other directors: J. W. Bogart, Morewood, Ont.; A. H. Coplan; Secretary-Treasurer, R. A. Bishop; Auditor, G. L. Blatch; Chief Engineer, L. Von Sydow. With the one exception, above named, the directors and officers live in Ottawa.

Niagara, St. Catharines and Toronto Ry.—Press reports state that the line from St. Catharines to Niagara on the Lake was practically completed Oct. 1. The line starts from Geneva St., St. Catharines, and is built partly on the highways and partly on private right of way. At Ten Mile Creek, which will be the entrance to the new Welland Canal, there is a spur to the lake front. The track is laid with 85 lb. rails to this point, and with 65 lb. rails for the remainder of the distance. An additional transformer station is being equipped at St. Catharines and a 750 k.w. rotary converter at Niagara on the Lake, where a freight yard is being laid out, and a connection will be made with the Michigan Central Rd. (Oct., pg. 494.)

Ottawa and St. Lawrence Electric Ry.—Press reports state that a contract has been let to a Toronto construction company, of which J. A. Morden is President, for the building of this line, which is to connect Ottawa, Morrisburg, Brockville and Arnprior, Ont. The contracting company is taking over the entire bond issue of the company. The company's offices are to be removed to Toronto. (Aug., pg. 395.)

Porcupine Rand Belt Line Ry.—Application is being made to the Ontario Government to subsidize the building of 100 miles of electric railway, either by a bond guarantee or a land grant. The proposed line would extend along the Ontario-Quebec boundary from Abitibi Lake to Haileybury, with branches connecting with or crossing the Timiskaming and Northern Ontario Ry., north of Swastika, near Porcupine, and at other points; and a connection with the Canadian Northern Ontario Ry. at Flying Post. (Jan., pg. 20.)

Port Arthur and Fort William Electric Ry.—The Fort William, Ont., City Council has deposited with the Public Works Department, Ottawa, plans of a 500,000 c.m., 556 volt direct current subaqueous armoured cable for conveying electrical energy for the operation of its electric railway extension, from the Kaministikwia Power Co.'s supply across the Kaministikwia River to Island 2.

The new belt line in Port Arthur was expected to be ready for operation Oct. 30. It leaves the main line at Clavet St., runs up that street to Alberta, along Alberta to Shuniah St., along Shuniah and across the city property to Balsam Ave., thence to Senico, and Bromlow, and along High St. to River St., down River St. to Pine St., where it connects with the Arthur St. line. (Oct., pg. 494.)

Regina Municipal Ry.—H. Doughty, Superintendent, in a recent report said: "This year's construction includes 23,700 ft. of single track laid with 60 lb. rails, 5,110 ft. laid with 80 lb. rails, 2,050 ft. single track of better construction laid with 80 lb. rails, 18,600 ft. of double track permanent construction laid with 80 lb. rails, or a total of 64,460 ft. in all. This does not include the Country Club line or about three miles still to be constructed. The cost to date this year is $637,000. Four miles of single track was replaced with double track permanent construction. The whole system now comprises: 63,000 ft. 60 lb. rails, single track, gravel construction; 5,110 ft. single, 80 lb. rails, gravel construction; 13,300 ft. single track, 80 lb. rails, concreted and partly paved; 32,150 ft. double track, 80 lb. rails, partly paved. This makes a total already constructed and exclusive of the Country Club line of 145,710 ft. or 27.75 miles. There is still about three miles to be constructed and this with 3.25 miles of the Country Club line will make a total of 34 miles." (Sept., pg. 442.)

St. John Ry.—Press reports state that construction on the extension to East St. John, N.B., is well advanced, and that it is expected to have this loop line in operation at an early date. (May, pg. 235.)

Sandwich, Windsor and Amherstburg Ry.—Application is being made to the Ontario Railway and Municipal Board to direct specific performance of an agreement between Tecumseh Tp. and the Essex, Windsor and Tecumseh Ry., now leased to the S. W. and A. R. Under the agreement the E. W. and T. R. was to make extensions when the line became profitable. The Board is being asked to decide whether the time has come when these extensions have to be made. (Oct., pg. 494.)

Saskatoon Municipal Ry.—The City Electrical Engineer notified the Saskatoon, Sask., City Council, Oct. 7, that the electric railway from Saskatoon to Sutherland, 4.5 miles, would be completed and ready for the city to take over very shortly. It was decided to take over the line as soon as the engineer certified that it was fully completed, and to put it in operation as soon as the new cars arrived. (Oct., pg. 494.)

Sudbury-Copper Cliff Electric Ry.—A bylaw granting a franchise for an electric railway in Sudbury, Ont., has been approved by the ratepayers. (June, 1912, pg. 310.)

Thorold, Ont.—The Town Council of Thorold, Ont., Oct. 8, decided to submit a bylaw to the ratepayers in January to raise $20,000 by debentures to build a street railway connecting with the factories at the south end of the town.

Winnipeg Electric Ry.—The Manitoba Public Utilities Commissioner has ordered the company to provide the necessary appurtenances and equipment for crossing the C.P.R. on Selkirk Ave.

The Assiniboine Municipal Council is asking the Manitoba Public Utilities Commissioner to order the company to move its tracks to the middle of the road throughout the municipality.

The extension of the car line to St. Vital was opened for traffic, Oct. 8. The line, which is three miles long, extends from the corner of Marion and Tache Sts., St. Boniface, to the south of Windsor park. (Oct., pg. 495.)

Electric Railway Notes.

The British Columbia Electric Ry. has ordered three standard single truck snow sweepers from the Ottawa Car Co., for delivery by Nov. 15.

During August, three men were killed and four were injured in the course of their employment in the operation of electric railways in the Dominion.

The Ottawa Electric Ry. has ordered two standard locomotive type, steel double truck snow sweepers from the Ottawa Car Co., for delivery about Nov. 15.

The average daily number of passengers carried on the Brandon Municipal Ry. during September was 2,500, against 2,776 in August. The car mileage averaged 900 miles a day.

The Montreal Tramways Co. has decided to obtain the ruling of the highest court, if necessary, in order to test its powers over passengers who refuse to comply with the company's antismoking regulations.

The Manager of the Port Arthur and Fort William Electric Ry. reported to the joint board of management, Oct. 6, that the line was paying too much for its power in comparison with what was charged other city utilities.

A number of residents along the Hamilton, Grimsby and Beamsville Ry. route, recently applied to the Ontario Railway and Municipal Board, for an order to fix certain additional stops for passengers. The matter was adjourned to enable the Board to go over the route.

The Montreal Tramways Co. is operating 775 cars on its various lines, about 100 in excess of those in service in 1912. New cars are being delivered at the rate of four a week, and it is said that there are still 250 on order.

The Montreal City Treasurer, in his annual report, recently compared the amounts paid to the cities of Montreal and Toronto by the street railways. The amount received by Montreal for 1912 was $411,001.69, against which was quoted the amount received by Toronto in 1911, viz., $772,108.64.

The Nipissing Central Ry., operated by the Timiskaming and Northern Ontario Ry. Commission, we are officially advised, is considering the matter of ordering two additional cars, but that if by the arrangement of a new schedule a certain end can be effected, the cars will not be ordered.

The Lethbridge, Alta., City Council is reported to have adopted the following schedule of wages for motormen and conductors on the municipal street railway:—First 6 months, 25c. an hour; second 6 months, 28c.; second year, 30c.; third year, 32c. On public holidays time and a half will be paid, and on Sundays 9 hours' pay will be given for 7½ hrs. work.

American Electric Railway Association's Convention.

This convention, which was held at Atlantic City, N.J., Oct. 13 to 17, was one of the most successful in the Association's history, the attendance of electric railway officials, etc., being very satisfactory, although not quite so large as at Chicago in 1912. A number of meetings were held of the American Electric Railway Association, and its subsidiary associations, accounting, engineering, claims agents, transportation and traffic, at which papers were read and discussed as well as reports of committees. The supply exhibits were on a larger scale than ever before.

The Canadian Electric Railway Association was officially represented by Patrick Dubee, President, and Acton Burrows, Secretary-Treasurer. It had its headquarters in the American Electric Railway Association's space at the entrance to the exhibit pier, and held a separate registration for Canadians attending, which was much appreciated.

The Ontario Railway and Municipal Board was represented by D. M. McIntyre, Chairman; A. B. Ingram, Vice Chairman; H. N. Kitson, Commissioner; and H. C. Small, Secretary. The Province of British Columbia was represented by W. Rae, Inspector of provincial railways there.

Among the Canadian electric railway officials attending were the following:—J. Anderson, Manager, Sandwich, Windsor and Amherstburg Ry.; R. A. Baldwin, Master Mechanic, Ottawa Electric Ry.; H. H. Beasley, Purchasing Agent, Toronto Ry.; D. E. Blair, Superintendent Rolling Stock, Montreal Tramways Co.; J. A. Burnett, Electrical Engineer, Grand Trunk Ry.; F. D. Burpee, Superintendent, Ottawa Electric Ry.; A. S. Byrd, Superintendent Power Plants, Montreal Tramways Co.; D. Campbell, Inspector, Toronto Ry.; W. P. Cooke, Chairman, Public Utilities Commission, Port Arthur, Ont.; H. Cowan, Chief Night Inspector, Toronto Ry.; W. Craig, Master Mechanic, Hull Electric Co.; H. Doughty, Superintendent, Regina Municipal Ry.; Patrick Dubee, Secretary-Treasurer, Montreal Tramways Co.; F. S. Easton, Engineer Hydro Electric Construction, British Columbia Electric Ry.; R. W. Ennis, Assistant Master Mechanic, Toronto and York Radial Ry.; A. L. Farquharson, Superintendent Street Railway Construction, Fort William, Ont.; A. Gaboury, Superintendent, Montreal Tramways Co.; G. Gordon Gale, General Superintendent, Hull Electric Co.; W. F. Graves, Chief Engineer, Montreal Tramways Co.; D. W. Harvey, Assistant Engineer, Toronto Ry.; J. B. Holder, Foreman Carpenter, Kingston, Portsmouth and Cataraqui Electric Ry.; G. K. Hyde, Storekeeper, Toronto and York Radial Ry.; W. M. Kirkwood, Superintendent, Galt, Preston and Hespeler Street Ry.; T. H. McCauley, Manager, Calgary Municipal Ry.; V. S. McIntyre, Superintendent, Berlin and Waterloo Street Ry.; J. S. Mackenzie, Purchasing Agent, Winnipeg Electric Ry.; W. R. McRae, Master Mechanic, Toronto Ry.; W. H. Munro, Local Manager, Peterborough Radial Ry.; H. C. Nickle, General Superintendent, Kingston, Portsmouth and Cataraqui Electric Ry.; O. A. Oakes, Foreman, Kingston, Portsmouth and Cataraqui Electric Ry.; L. Palk, Claims Agent, Winnipeg Electric Ry.; H. E. Phillips, Superintendent Power Station, Winnipeg Electric Ry.; Wilson Phillips, Superintendent, Winnipeg Electric Ry.; M. O. Robinson, General Manager, Port Arthur and Fort William Electric Ry.; G. C. Royce, Manager, Toronto Suburban Ry.; H. G. Salisbury, Architect and Structural Engineer, Toronto Ry.; A. E. Shaw, Chief Claims Agent, Montreal Tramways Co.; J. M. Smith, Comptroller, Toronto Ry.; M. F. M. Werth, Assistant Mechanical Superintendent, British Columbia Electric Ry.; C. L. Wilson, Assistant Manager, Toronto and York Radial Ry.; J. A. Wilson, Chief Draughtsman, Ottawa Electric Ry.

Among the Canadian supply men in attendance were H. C. Anderson, Sales Department, John Millen and Son, Ltd., Toronto; H. D. Bayne, Special Agent, Canadian General Electric Co. and Canadian Allis-Chalmers Co., Toronto; G. Broughall, Secretary, and F. Erickson Brown, General Manager, Northey-Simmen Signal Co., Toronto; D. M. Campbell, General Manager, Preston Car and Coach Co.; W. A. Chapman, Manager, Rail Joint Co. of Canada, Montreal; J. A. Dawson, Dawson and Co., Ltd., Montreal; P. A. Hinds, District Sales Agent, Eastern Canada, Ohio Brass Co., Toronto; W. K. Jeffrey, General Manager, Ottawa Car Co.; A. C. Lewis, Vice President, Templeton-Kenly and Co., Toronto; F. D. Lyman, Manager, Railway Supply Co., John Millen and Son, Ltd., Montreal; G. Shenton, Salesman, Railway Supply Department, John Millen and Son, Ltd., Montreal.

The Canadian Westinghouse Co. sent a large delegation, including P. J. Myler, Vice President, N. S. Braden and H. U. Hart, Hamilton; C. F. Medbury, A. B. Brown and H. E. Blatch, Montreal; J. F. Dryden, Toronto; W. A. Duff, Winnipeg; R. A. Davis, Calgary, and J. R. Read, Vancouver.

Comparative Salaries on an Electric Railway.—During the recent hearings in Boston, Mass., to take evidence on the controversy between the Boston Elevated Ry. Co. and its carmen the following facts were brought out in regard to the salaries of the various officers: The salaries are: President, $36,000 a year; First Vice President, $20,000; Second Vice President, $15,000; Treasurer, $12,000; Real Estate Agent and Asst. Secretary, $10,000; Clerk, $10,000; General Auditor, $7,500; General Counsel, $25,000; Assistant Counsel, $15,000; Publicity Agent, $4,000; Chief Engineer, $9,500.

The storage bin annex of the C.P.R. elevator at Transcona, Man., on Oct. 18 sank about 20 ft., the cupola of concrete slipping off and the bins remaining at an angle of about 26 degrees. There were about 900,000 bush. of wheat in storage, which it was expected would be removed and shipped without damage.

Marine Department.

Additional Car Ferry for the Intercolonial Railway's Strait of Canso Service.

The Intercolonial Ry. has called tenders for a new car ferry [illegible] for transport-[illegible] the Strait of Canso, from the mainland of Nova Scotia to Cape Breton Island on the Truro-Sydney line. The new ferry is to be similar to the present ferry Scotia as far as practicable, the principal point of difference being an additional [illegible] of [illegible] ft. The principal dimensions will be as follows:—Length overall, 300 ft.; length between perpendiculars, 276 ft.; breadth over fenders, 48 ft.; moulded breadth on deck, 46 ft.; breadth at load water line, 43½ ft.; moulded depth, 19 ft.; draught when laden with 1,400 tons of car load and 150 tons of coal, water and stores, 14 ft.; and [illegible]

[illegible] ram in front of bow propeller to break ice. [illegible] strengthened at the water line fore and aft [illegible] bulwarks on the sides and a small pilot [illegible] Mess room accommodation is to be provided [illegible] propeller is to have an independent triple [illegible] to be capable of indicating about 3,000 h.p. [illegible] 100 A1 single deck, and to comply with the British Board of Trade requirements. Spe-[illegible] to be specially framed to support the weight of locomotives of class "special heavy" of the Dominion Government specification on [illegible]

[illegible] plates, connected to the propeller posts at [illegible] up the face of the [illegible] with [illegible] the [illegible] floor [illegible]

[illegible] th no [illegible] girders will be connected at the bottom to the side keelsons, and the top to intercostal plates running fore and aft and connected to the beams and deck plating. The main deck is to be formed of steel plates, sheathed with 2½ in. pitch pine overall. The under side of the deck over the engine and living rooms is to insulated by providing air spaces and insulating materials, to eliminate air condensation with a maximum outside temperature of 20 degrees below zero.

The coal bunkers are to be arranged to carry 75 tons or more if practicable, to be loaded by chutes from the centre track. Four coaling doors are called for in the bunker sides to suit the boiler firing.

A close steel bulwark, 8½ ft. high, is to extend along both sides and stern, with portable wrought iron stanchions in the bow. The bulwark is to have a steel bulb angle stiffening rail along the top, and is to be stayed every 6 ft. with a bulb plate. 80 lb. rails will be used at the standard 4 ft. 8½ in. gauge, supported on elm runners on a steel girder formed of two steel angles. Scupper holes will be cut in the girders for drainage. Oak fenders, 10 by 12 ins., will be fitted all around the vessel, between steel angles, and protected on the outside by thick plate of steel, 10 ins. deep.

There is to be a steel pilot house 7½ ft. high, arranged for the steering standard and a wheel for the steam steering gear, and other pilot house fittings. The pilot bridge, of 2½ in. pitch pine, carried on a steel frame from the sides of the vessel, is to be placed forward on the vessel. It is to be of sufficient width to afford a passageway in front of the pilot house, and will be reached by two steel ladders. A combined hand and steam steering gear is to be connected to the rudder, working directly on the quadrant, and fitted with all necessary fittings, to be controlled from the pilot house by geared rods.

There will be four steam warping capstans for working the anchor cables and mooring ropes, all but the capstan heads to be placed below the deck, and to be operated by levers on the deck. Wooden chain lockers will be conveniently located as regards the capstans. Two anchor davits, complete with blocks and falls, etc., will be [illegible] near the cable capstans. There will also be six pairs of mooring bitts with necessary mooring pipes, with hawse pipes for the cables formed of heavy castings securely fastened to the deck.

Four rooms will be provided for the [illegible] rooms for the day and night captains, and two for the chief engineers. There will [illegible] fitted in a comfortable manner. The crew's [illegible] All these rooms will be sheathed in white wood, and [illegible] condensation. The galley will be conveni-[illegible] will be conveniently located, with necessary fittings, and a connection to the galley.

The vessel will be equipped with two 24 ft. life boats and an ice boat. The inside and outside of the vessel will receive 3 coats of oil paint, finished in appropriate colors. The officers' quarters will be painted in colors and varnished, and the crew's quarters painted only. The bottom of the vessel will be coated with Portland cement. The floors of the crew's lavatory will be cemented, and the lavatories of officers and passengers will be finished in tile.

The engines will be of the triple expansion, inverted, direct acting, surface condensing type, working on three cranks, each set of engines being a duplicate one of the other in the working parts. They are to be designed so that they will stand, without injury, the sudden stoppages of the screws when working amongst ice. One surface condenser will be fitted to both sets of engines. The machinery will be so placed that by the introduction of a short length of shafting between the two engines, one can be arranged to work both propellers, and the other can be disconnected from the shafting when desired. A starting valve is to be fitted, working from the starting platform. The reversing gear will be of the latest direct acting hydro steam type, with hand gear and handles conveniently arranged, with the weight shaft supported on long bearings.

The general purpose pump will be connected to the condenser for use when required. The circulating pump will be of the twin centrifugal type, driven by a single cylinder engine, taking steam from the auxiliary steam pipe and exhausting directly to the condenser. It will be arranged to draw from the ice box and bilges, and to discharge through the condenser overboard. The air pump will be of the twin independent vertical type, having single acting air pumps worked from either end of a beam actuated by a single steam cylinder, the working barrel of brass to draw from the bottom of the condenser and deliver to the feed pump control tank. The main feed pump is to be of the independent duplex direct acting type, fitted with tank having a float and automatic control gear, the pump to be capable of dealing with the water from both engines when working at full speed. It will draw from the control tank, and also from the sea and fresh water tanks and discharge to the boilers. There will also be a general purpose pump, capable of discharging 90 tons of water an hour, to draw from the bilges and from the sea, and discharge overboard and into wash deck and service pipes. An auxiliary feed pump of the duplex type will draw from the sea, from the fresh water tank and from the control tank, and discharge into the boilers, on deck and overboard, and also arranged to circulate water in the boilers when getting up steam and to discharge through the condenser.

The electrical equipment will comprise a complete installation of electric lights, with two separate 25 k.w. 80 volt multipolar generators direct connected to [illegible] vertical [illegible] compound Bellis and Morcom engines, approximating 350 to 400 r.p.m. There will be a separate switchboard for each generator, containing the necessary control and recording apparatus. There will also be a feeder panel for the searchlight, arc lamp and incandescent lamp circuits. The search light will be of the 15,000 c.p. pilot house type, supplied with the necessary gear and connections in the pilot house.

The size of the vessel precludes the possibility of builders on the Great Lakes bidding on the proposition, as they are limited in production to the capacity of the St. Lawrence canals.

Lake Shippers' Clearance Association.

Canadian Railway and Marine World for October contained the President's address and the General Manager's report at this association's annual meeting in Winnipeg, Aug. 26.

The following resolution was adopted:—"Seeing that both shippers and vessel owners are quite satisfied with the present conditions, that the existing rates be continued for the coming season, and that the new board, at an early date, consider the disposal of any surplus made after $75,000.00 is reached as a reserve."

It was decided to raise the entrance fee from $1,000 to $1,500.

The profit and loss account showed balance from previous year $5,289.45, balance from operating account, $32,619.58; total, $37,909.03. Of this $30,000 was transferred to reserve.

ASSETS

Bank balances: Winnipeg..	$ 44,791.86	
" Fort William	25,415.65	
" Duluth	978.90	
		$ 71,186.41
Accounts Receivable: Vessel charges	2,124.40	
" " Shippers	72,721.25	
" " Sundry	3,403.16	
		78,248.81
Sundry shippers: for accrued storage		32,006.53
Investments: Traders' Building Association....... ..		14,694.00
" Grain Exchange Seat..		1,600.00
Office Furniture: Winnipeg	3,963.07	
" Fort William.....	1,031.44	
		4,994.51
		$202,730.26

LIABILITIES

Accounts Payable: Elevator charges.	$102,578.75	
" Sundry	875.92	
		$103,454.67
Sundry elevators: for accrued Storage		20,716.56
" Members' fees		5,650.00
" Reserve..........		65,000.00
Balance: Profit and Loss...........		7,909.03
		$202,730.26

SCHEDULE OF VESSEL TARIFF.

(a) Vessels up to 125,000 bush. of wheat capacity—30c. per 1,000 bush. for loading within 24 hours of arrival, loading weather.

(b) Vessels of 125,000 to 200,000 bush. of wheat capacity—30c. per 1,000 bush. for loading within 48 hours of arrival, loading weather.

(c) Vessels of 200,000 or over bush. of wheat capacity, as follows:—40c. per thousand for loading in 24 hours, 30c. per thousand for loading in 48 hours, 20c. per thousand for loading in 60 hours, 10c. per thousand for loading in more than 60 hours.

If above time limits are exceeded in classes (a) and (b) the charge is to be 10c. per thousand bush.

If delay is caused by non-surrender of documents, the shippers are to be penalized by the Lake Shippers' Clearance Association to the extent of the estimated loss of revenue to the Association by reason of such delay.

Sample cargoes to be loaded at 15c. per 1,000 bush. straight.

After Nov. 25 and until the close of navigation, the charge to be 20c. per 1,000 bush. flat on all boats loaded.

Time shall start from time of arrival ready for loading, if such time is prior to 4 p.m. on a working day. If after that hour, time shall start at 7 a.m. on the following morning, if elevators not working during the night.

John Corbett on the Ocean Freight Rate Question.

John Corbett, of Montreal, who was for 28 years Foreign Freight Agent, C.P.R., writes as follows:—I should be favored if you could find space for this letter, which expresses my views as a practical business man, on the ocean freight rates agitation, which after a tenuous and querulous existence, appears at last to have nearly exhausted itself. Born of personal interest, and sustained by ignorance, misconception and misstatements, it has not been able to withstand the searchlight of hard facts.

The first mistake its initiators made was that they sought to violate one of the first principles of the commercial world, and one which before now has been upheld by the highest courts of the empire, viz., the undeniable right of the private trader to conduct his legitimate affairs without interference. In spite of the fact that the conference system has given us advantages and facilities which otherwise would not now be in force, the agitators have allowed themselves to put before the public a picture of the conference, as a bloodsucking monopoly of the worst type. One of the worst monopolies that we have to endure at present in this country is that of the millers. As was pointed out in an evening paper the other day, Canadian flour is much cheaper in London than in the industrial centres in Canada. This fact should be specially interesting to consumers in the Dominion, and should make them ask themselves what is the reason? There is an old saying "that people who live in glass houses should not throw stones."

A prime mistake made by the agitators was the attempt to institute comparisons between railway rates and ocean rates. A little consideration would have shown them that railways were chartered with certain privileges, and had practically a monopoly in the districts they served, whereas there are no privileges on the ocean, which is open to any steamship owner of any nationality who can obtain a freight.

A very interesting statement of the fluctuations in ocean freight rates was published in one of the leading shipping papers some time ago. That statement, which was illustrated by a diagram, took the boom year of 1900 as a basis for its remarks. As is well known to everyone, the high rates prevailing in 1900 were not the result of an increase in trade, but of a spasmodic increase due to the large requirements of tonnage of all kinds by the British Government in the South African affair. From 1884 to 1889 trade was steady, and very little variation in rates took place, but from 1889 to 1895 rates again fell, till in the latter year they were 40% less than in the former. Unsettled political conditions had again had an effect on rates, which rose to within 9% of the basis of 1900. When the British Government were finished with the large amount of tonnage employed by it, the effect of so many vessels being replaced on their regular trades was seen by a fall of 26% in that year. Rates remained so unremunerative that shipowners refrained from building new vessels until in 1911 a natural increase in the demand for tonnage having taken place, the supply available was overtaken, and rates began again to move upwards to a paying basis. The great coal and transport workers' strike of that year in Great Britain had a very serious effect on freight rates, tying up thousands of tons of steamships, and resulting afterwards for a short period in a fictitious rise in rates for the time being, in order to overtake lost time. As is well known, a marked improvement has taken place in the class of tramp steam ships. They are better built, better equipped, and therefore they can be handled more expeditiously and economically than was formerly the case with that class of vessel. That, besides being of advantage to the owners, is of great benefit to the shippers and merchants.

The report of the British Royal Commission on shipping rings and rebates states the case fairly and temperately. While it is admitted that there are weaknesses in the system, it is shown that such weaknesses could be dealt with and eradicated by simple means, and it completely repudiated the right of the state to interfere with an industry to which it granted neither a trading monopoly nor a guarantee of profit.

Government Wharf at Burrard Inlet, Vancouver.

A contract has been let by the Department of Public Works, Ottawa, to Henry, McFee and McDonald, Vancouver, B.C., for the construction of a wharf on Burrard Inlet, between Salisbury and Commercial Drives, Vancouver. The work to be done consist of excavation in earth and rock to a depth of 35 ft. at low tide over the slips on each side of the wharf, and 36 ft. over the area covered by the cribs, or such other depth as may be ordered; the construction of lines of timber cribs sheathed with reinforced concrete, and filled with stone ballast with a mass of concrete superstructure forming a wharf 800 ft. by 300 ft.; construction of two bulkheads of timber cribwork sheathed with reinforced concrete with a mass of concrete superstructure at the shore end of the wharf, each 40 ft. long; the filling in between the two lines of cribs to the level of the coping of the mass concrete superstructure and at the back of the bulkheads to the railway right of way; and to deposit layers of rubble and broken stone and level the same to receive the cribs.

The total quantity of rock excavation is approximately 108,000 cubic yards, plan measurement, of which 100,000 cubic yards, it is assumed, may be used as ballast in cribs and for foundations, and the remainder used in other parts of the work as may be approved by the engineer.

The sides and outer end of the wharf are to be built of timber cribs, 100 ft. long, 37 ft. wide, and 39 ft. high, so that when sunk the tops shall stand four feet above low water at spring tides. The cribs are to be built on platforms constructed of 18 by 12 in. timbers 39¼ ft. long, all the pieces bolted to each other every three feet by one inch round drift bolts, each 24 ins. long. The platform and sides of the cribs to be rendered watertight by being caulked with oakum. The cribs are to be towed into place, and then to be sheathed to a thickness of 2 ft. on the outer face, and 1 ft. thick on the other three faces, with reinforced concrete, and sunk into position by being filled with rock ballast. The bulkheads at the inner end of the wharf shall consist of one crib each, of similar construction and proportionate size to the cribs in the main pier. The superstructure will consist of a concrete mass, finished with granolithic concrete 6 ins. thick. The area enclosed by the concrete walls and at the back of the bulkheads is to be filled with approved material, with a top filling of broken stone and fine gravel 1 ft. thick, the whole made compact by being rolled with an 8-ton steam roller. On the outer face of the wharf and bulkheads there shall be placed two walings of B.C. fir, 15 by 18 ins.

The contract calls for the employment of Canadian labor, the use of Canadian material, and the completion of the work in two years. Its estimated cost is $1,250,000.

The Steamship Whakatane's Collision with a Wharf in the St. Lawrence.

Commander H. St. G. Lindsay, R.D., R.N.R., Dominion Wreck Commissioner, gave the following decision Oct. 17, which was concurred in by Captains F. Nash and R. S. Clift, assessors:—The British steamship Whakatane, official no. 11648, on a voyage from Cardiff, South Wales, for Montreal via Sydney, N.S., and apparently well manned and equipped in every respect, arrived at Father Point, Gulf of St. Lawrence, on the afternoon of Sept. 12 and took on board a licensed pilot and proceeded at once on her voyage towards Quebec and Montreal. Fine weather was experienced during the trip up the river until shortly after passing St. Jean light, Orleans Island, which was abeam at 3.20 a.m. of Sept. 13, when slight mist or smoke lying close to the water was met with, and the pilot, who appears to have been in full and complete charge of the navigation of the vessel, ordered the speed to be reduced to half speed and shortly after that to slow. At 3.50 a.m. St. Laurent light was abeam, and the light on Beaumont Shoal buoy, almost opposite on the south side of the channel, was also observed quite distinctly, and the vessel, according to the evidence, although no bearing was taken, passing about midway between these two lights, and the course was then altered by the pilot about half a point to the westward. After proceeding on this course for about 5 or 10 minutes, the course was again altered with the intention of passing to the southward of West Point light at the usual distance off, viz., about half a mile. Shortly after this the master called the pilot's attention to some lights on the south shore, being, as he thought, rather close aboard, and the pilot gave orders to alter the course a quarter of a point to the westward, which was done, and some minutes after the look outs reported something right ahead, which ultimately proved to be a portion of a wrecked steamer lying on the south bank of the river. Orders were at once given to put the helm aport, full speed astern on the engines, and let go the anchor; but the ship's head had barely started to swing to starboard, under the influence of the port helm, when she ran with great force into Gilmour's wharf at Indian Cove, remaining aground there for some 13 hours, when she was pulled off at high water by tugs and [illegible] Basin, Quebec, and from there to the Levis drydock, where temporary repairs were effected.

The court, after carefully considering the evidence, which, in some particulars, appeared [illegible] a conflicting nature, is unanimous in its opinion that both the master and pilot are to blame for the casualty, inasmuch as the master did not take sufficient interest in the navigation of his vessel after leaving Father Point, leaving it almost entirely in the pilot's hands, and [illegible] appears to have been followed by the officers, as it would appear that no particular attention was given to the steering, the navigating of the ship being carried [illegible] on the steering compass in the wheelhouse, instead of on the standard compass, and if the times given in the [illegible] no one seems to have [illegible] making into consideration, between the various [illegible] it would appear that instead of six knots, which the court was informed was the supposed speed of the vessel when passing St. Laurent light, it appears by the time given in the log book to be nearer 12 knots. The time from abeam of St. Laurent light to the time of the stranding is given as 33 minutes, and the exact distance being six miles between these points, shows in itself how much reliance the court can put on either evidence or log book entries. The court, therefore, not wishing to deal with the certificate of J. H. Squires, the master, taking into consideration his want of experience as master, and his seeming ignorance as to the regulations connected with the St. Lawrence pilotage, severely reprimands him for his unfortunate lack of initiative pertaining to the safe navigation of his vessel, and the court hopes that this reprimand may prove beneficial to him in the future. With respect to the actions of L. T. Delisle, the pilot, which, in the court's opinion are inexplicable, as the courses steered and given by him in his evidence after leaving St. Laurent light, put the ship exactly where she struck the wharf, and even if he had been misled by the wheelhouse compass being locally affected, which is quite possible, the fact of being able to see the lights on both sides of the river some time before the accident, makes it more difficult for the court to understand how he allowed the vessel to get so far out of her proper course without noticing that fact in time to avert the accident. The court therefore suspends his license for the balance of the present season of navigation, and also orders that he pay all costs and personal expenses pertaining to himself with respect to this inquiry. The court, in taking into consideration the number and similarity of accidents occurring in the St. Lawrence within the last 12 months, cannot but recognize the fact that the masters do not seem to realize that, although a pilot is on board, the responsibility for the safety of the ship still rests with them, just as if no pilot were engaged, as only the payment of pilotage dues is compulsory, and not the employment of pilots. This is clearly set forth in sec. 473, chap. 113, of the Revised Statutes of Canada, 1906, and if those in charge of vessels navigating in Canadian pilotage waters were to live up to this, especially in the St. Lawrence trade, there would be fewer accidents of the like nature. The court also severely criticizes the fact of the pilot leaving the vessel when he did, instead of standing by her to assist in getting her afloat.

Work on Panama Canal.

By the blowing up of the Gamboa Dyke, the signal for which was given by telegraph from Washington, D.C., by the U.S. President, Oct. 10, the water was let into the Culebra cut, and practical connection made between the Atlantic and Pacific Oceans. The work of excavation was first commenced on the Culebra cut Jan. 20, 1882, by the original French company, and the amount of material removed by it and its French successor was approximately 17,000,000 cu. yds. The U.S. Government took over the work May 4, 1904, and continued the use of the equipment left by the old companies, until it could be replaced by more modern machinery. The first modern steam shovel was put into use Nov. 11, 1904, and the last of the old equipment was displaced by June 16, 1905. Since the U.S. Government undertook the work, 97,049,601 cu. yds. of material have been removed from the Culebra cut, the maximum output being in 1911, when 16,596,891 cu. yds. were dealt with. Considerable trouble has been experienced with earth slides, and the removal of these will be dealt with as a regular part of the dredging work of keeping a clear channel. The total length of the canal [illegible] 47 miles.

Vessels will not proceed through the canal under their own steam, but will be towed through by electric locomotives, specially designed for the work. A series of tests took place recently, with a sample locomotive, with a view to detecting defects and making the necessary modifications and alterations. As a result, 40 locomotives have been ordered from the General Electric Co., at a net cost of $13,217 each. The first locomotive is to be delivered in seven months from the date of the order, and the remainder at the rate of four a month.

Proposed Dry Dock and Shipbuilding Plant for Sault Ste. Marie.

The project for the establishment of a dry dock and shipbuilding plant at Sault Ste. Marie, Ont., has been before the local authorities for some time, and a bylaw was passed by the ratepayers in 1909 confirming an agreement with J. O'Boyle for the construction of such works, by him or a company formed for the purpose, at an estimated cost of $500,000. The dimensions of the dock were to be:—Length from sill to head of dock, 620 ft.; width on floor, 53 ft.; width at level of sill, 70 ft.; width at top, 85½ ft., with a depth of water over the sill of 17½ ft. under normal conditions. The city was to pay an annual subsidy of $5,000 a year for 20 years, the first payment becoming due when $100,000 had been expended on construction work, and the second payment being due when the dock was completed and ready for operation. A company was formed to undertake the work, under the name of the Sault Ste. Marie Dry Dock and Shipbuilding Co., and in 1911 the city agreed that the terms of the agreement with J. O'Boyle were binding with the company. Nothing was done by the company in connection with the project, and in March, 1912, it was announced that the charter had been acquired by F. H. Clergue, who was formerly connected with the Lake Superior Corporation, and some associates, and that construction would be proceeded with at once, that plans had been deposited with the Dominion Public Works Department, and that $1,500,000 would be spent on the plant. No steps were, however, taken towards commencing the work, and it was recently stated that the charter had lapsed, and that the whole scheme had fallen through.

Fresh proposals were placed before the city council, Oct. 6, by which the city is asked to give a bonus of $20,000 a year for 20 years, with exemption from all taxes, except school taxes for the first five years, a fixed assessment of $250,000 for the next five years, and a fixed assessment of $500,000 for the next ten years. It is proposed to build a plant to cost approximately $2,000,000, to employ 1,500 men when in full running order, and capable of handling vessels of 15,000 tons displacement. F. H. Clergue, Sault Ste. Marie, and F. H. Bromwich, London, Eng., are interested in the scheme, and are reported to have stated that funds are available for the commencement of the work as soon as the city assents to the terms. The Mayor, at a meeting of ratepayers, Oct. 8, stated that the promoters had agreed to deposit $25,000 with a local bank as evidence of good faith, and had undertaken that construction commence not later than Apr. 1, 1914, and that the plant would be ready for operation in two years from that date. The sum deposited in the bank was not to be released until $100,000 had been spent on construction, and taxes would be paid on a fixed assessment of $500,000 for 15 years, instead of as originally suggested. It is also stated that the contract will be undertaken by Sir Douglas Fox and Partners, London, Eng. A bylaw is in course of preparation for submission to a vote at an early date.

Dominion Government Steamboat for St. Lawrence Light and Buoy Service.

The Dominion Government has awarded the contract for the construction of a single screw steamboat for the Department of Marine, for use on the St. Lawrence light and buoy service, to Polson Iron Works, Toronto, for $173,399.

The principal dimensions are, length between perpendiculars 155 ft., length over all 164½ ft., depth moulded 30 ft., coal capacity full supply, about 100 tons, accommodation, officers and men, 24.

The vessel will be built of steel throughout, except where specially specified, under Government survey and classed 100 A1 at Lloyd's under its special survey. There will be six main transverse watertight bulkheads and a watertight flat at the bow and stern, which, with the bulkheads adjoining, will form trimming tanks. She will have a straight stem and cruiser stern, and lower, main, bridge and forecastle decks. The steel and other materials, equipment, auxiliaries and stores used in the construction and completion of the vessel, are to be of Canadian or British manufacture throughout. The draught with 183 tons of dead weight on board is not to exceed 9½ ft.

The propelling machinery will consist of one single screw, inverted triple expansion engine, jet condensing, with cylinders 14, 22½ and 38 ins. diar. by 24 ins. stroke, working on cranks at 120 degrees, to develop 900 i. h. p. during a 6 hrs. trial when running at about 185 r. p. m. under a steam pressure of 180 lbs. Steam will be furnished by two Scotch marine boilers of the single ended type arranged to work under Howden's patent system of forced draught.

The auxiliary equipment will include, one 15 ton derrick crane, two 4 ton derrick cranes, two life boats, engine room telegraphs, complete electric light installation, including search light, air, bilge feed, fresh water, sanitary, ballast and general service pumps, windlass, boat hoist, heavy derrick winch, small derrick winch, steam and hand steering gear, etc. The general crew's quarters will be located on the lower deck forward, and the officers' quarters on the main deck, aft.

Delivery is to be made at Prescott, Ont., in nine months from the awarding of the contract, after satisfactory progressive speed trials from six knots upwards, with 100 tons dead weight on board, for six hours.

Government Dry Dock at Lauzon, Quebec.

The dry dock which has been placed under contract by the Dominion Government, to be built at Lauzon, Que., and which was fully described in Canadian Railway and Marine World for October, will, when completed, be the largest dry dock in the world. Engineering News, in commenting on this, refers to the three largest dry docks, the first two of which are under construction and under design, respectively, the third one being in operation. The dimensions of the three are as follows:—Lauzon, Que., 1,150 ft. clear length, 120 ft. width, 45 ft. maximum depth; Boston, Mass., 1,150 ft. clear length, 120 ft. width, 35 ft. maximum depth; Gladstone Dock, Liverpool, Eng., 1,020 ft. clear length, 120 ft. width, 46 ft. maximum depth.

The press report that E. A. Hoare, M. Can. Soc. C.E., Quebec, has been appointed to supervise the execution of the construction work is, we are officially advised, incorrect.

Grounding of s.s. Mount Temple.

The Dominion Wreck Commissioner, Commander H. St. G. Lindsay, assisted by Capts. F. Nash, John Mitchell and Joseph Ostens, as assessors, investigated recently the cause of the grounding of the C.P.R. s.s. Mount Temple in Montreal harbor, Sept. 24. The evidence showed that the vessel left her loading berth with a general cargo, drawing 26 ft. 10 ins. forward and 27½ ft. aft, under the direction of Pilot L. Z. Bouille. The weather appears to have been fine and clear, and everything worked satisfactorily while proceeding to the ship channel, and the engines were ordered full speed ahead, with the vessel proceeding down the river. On account of the range lights astern being obscured by smoke from the town and factories, the vessel, after passing the Tarte pier, was being navigated by the buoys marking the south side of the channel, and grounded about 500 ft. below buoy 181M and remained fast until the morning of Sept. 26, when she was pulled off after discharging part of her cargo. She was later drydocked at Montreal, and it was found that considerable damage had been done to the bottom of her hull. The evidence tended to show that the vessel is slow in answering her helm, but this peculiarity was well known to those in charge of the bridge at the time of the accident. The court was unanimous in its opinion that the cause of the grounding was due to an error in judgment on the part of the pilot in not altering his course to port, knowing that the vessel was slow in answering her helm, and bringing buoy 177M on his starboard bow before getting abreast of buoy 181M, which, in the court's opinion, was passed too close for safe navigation under the circumstance, taking into consideration the speed of the vessel, about 15 knots, and the proximity of the bank to starboard, on which she grounded. Pilot L. Z. Bouille was therefore severely censured. The court attached no blame to the master or officers of the vessel, but considers that the manner in which the entries are written in the engineer's log book is open to criticism. With regard to the positions of buoys 191M and 193M, which were found to be incorrect, the court did not consider that this had any bearing on the stranding, as the pilot having buoy 181M almost alongside and buoy 177M plainly in sight ahead, he had no reason to depend on the buoys westward to assist him in keeping his vessel in the channel.

Canadian Notices to Mariners.

The Department of Marine has issued the following:—

309. Sept. 18.—Ontario, St. Clair River, lower end, southeast bend, lights established.

310. Sept. 19.—Quebec, Gulf of St. Lawrence, north side, off Great Mekattina Island, Flat Island, lighthouse established.

311. Sept. 19.—Quebec, Gulf of St. Lawrence, north side, St. Mary Island, lighthouse established.

312. Sept. 22.—Nova Scotia, Cape Breton Island, east coast, Sydney harbor entrance, off Cranberry Head, Cran Rock, gas and bell buoy to be established.

313. Sept. 22.—Quebec, Gulf of St. Lawrence, Magdalen Islands, Alright Island, extension to Pointe Bass wharf.

314. Sept. 22.—Quebec, Richelieu River, St. Denis, lighted buoy established.

315. Sept. 22.—Quebec, River St. Lawrence, ship channel between Quebec and Montreal, Varennes Traverse, change in character of buoy, Ile aux Vaches Traverse, change in character of buoy.

316. Sept. 25.—Quebec, Ottawa River, Lake of Two Mountains, Hudson, buoy established.

317. Sept. 25.—Ontario, Lake Ontario,

List of Steam Vessels Registered in Canada during September, 1913.

No.	Name	Port of Registry	When and Where Built		Length	Breadth	Depth	Gross Tons	Reg Tons	Engines, Etc.	Owner or Managing Owner
133756	G. S. Mayes	St. John, N.B.	St. John, N.B.	1913	79 6	19 8	10 1	110	74	37n.h.p. sc.	Beaver Dredging Co., St. John, N.B.
131017	Ha-Ha	Quebec, Que.	Isle St. Louis, Que.	1913	51 2	15 0	6 0	38	22	17 " "	J. Page, Alphonse, Que.
133936	I. S. Rayside	Ottawa	Montebello, Que.	1913	66 0	17 8	6 6	49	28	17 " "	Owens Lumber Co., Montreal.
13 975	Lynn B.	Collingwood, Ont.	Midland, Ont.	1913	80 0	20 0	9 1	124	84	37 " "	C. S. Boone Dredging & Construction Co., Toronto
85075	Selma	Vancouver, B.C.	Glasgow, Scotland	1881	141 8	22 1	11 6	203	96	80 " "	The Allied Line, Vancouver, B.C.

List of Sailing Vessels and Barges Registered in Canada during September, 1913.

No	Name	Port of Registry	Rig	When and Where Built		Length	Breadth	Depth	Reg Tons	Owner or Managing Owner
133886	A. M. G. No. 1	Vancouver, B.C.	Scow	North Vancouver	1913	81 0	30 9	8 2	193	A. M. Garnett, Cobble Hill, B.C.
133746	Cara Mia	Toronto	Cutter	Bristol, R.I.	1910	50 0	10 0	5 5	13	M. L. Gordon, Toronto.
134141	Dorval Ferry	Montreal	Scow	Sorel, Que	1913	50 2	25 0	2 4	45	Dorval Island Park Co., Montreal.
133998	Fowlie	Chatham, N.B.	Dredge	Little Branch, N.B.	1913	34 0	14 5	3 8	20	F. A. Fowlie, Little Branch, N.B.
133997	Hibbert C	" "	Schr	Miminegash, P.E.I.	1913	60 0	18 2	7 0	56	P. T. Costain, Miminegash, P.E.I.
133819	James Burton Cook	Lunenburg, N.S.	"	Lunenburg, N.S.	1913	109 8	26 3	10 4	100	W. Smith, M.O., Lunenburg, N.S.
133889	John C. Potter	Vancouver, B.C.	Barge	Searsport, Me.	1869	190 0	36 7	24 0	1145	Granby Consolidated Mining, Smelting & Power Co., Grand Forks, B.C.
133820	Lobelia L	Lunenburg, N.S.	Schr	Little Tancook, N.S.	1913	48 8	13 0	7 8	25	C. Levy, M.O., Little Tancook, N.S.
122614	Menesetung	Goderich, Ont.	Dredge	Goderich, Ont.	1913	73 0	27 0	7 0	205	W. Marlton and W. L. Horton, J.O., Goderich, Ont.
133838	Philomene C.	Montreal	Sloop	St. Aime, Que.	1913	54 1	15 9	4 4	25	B. Caron, St. Aime, Que.
134061	Puget Sound	Vancouver, B.C.	Dredge	U.S.		107 0	41 0	12 0	61	West Coast Bridge & Dredging Co., Vancouver, B.C.
131019	St. Stanislas	Quebec, Que.	Yawl	Lotbiniere, Que.	1907	76 7	23 2	6 5	54	X. Marion, Lotbiniere, Que.

[illegible]

The Dominion Government's Projected Canal Improvement at Sault Ste. Marie, Ont.

In previous issues of Canadian Railway and Marine World very full information has been given in connection with the construction of the proposed Welland ship canal, which work, though of very great importance in itself, would not possibly reach its full height of usefulness in the navigation of Canadian waters from the head of the lakes to the ocean, unless it was followed by considerable improvements to the canal system on either side. This was made perfectly clear by the Minister of Railways and Canals at Sault Ste. Marie, Ont., recently, when he stated that the new Welland Canal, to be of the greatest use to Canada, must be followed by improvements in the other waterways at other points, and that it would be foolish to carry out the Welland Canal work, if it was not intended [illegible] to improve the Sault Canal.

In order to be prepared to take up the work at the proper time and with the view of saving expense, the Government is expropriating certain land in the vicinity of the Sault Canal, with the ultimate object of building a new canal, or altering and enlarging the present one. Matters relating to the nature of the work to be undertaken, the extent of new proposed equipment, etc., are as yet to be considered, and any dimensions mentioned in the daily press from time to time are merely conjectural.

The Revolving Ship is one of those inventions which, although they are obviously impracticable, seem to have a fascination for the inventor which is rather difficult to explain. Several years ago there was built and tried in Toronto a boat of the revolving type which reached a stage at which it was launched and an attempt was made unsuccessfully to propel it. According to a despatch from London, a Paris inventor is now busy upon another of these craft, and judging from the meagre description given, the inventor is following along the lines that were proved to be altogether impracticable several years ago.

The first terminal elevator to be built and operated by the Dominion Government received its first shipment of grain at Port Arthur, Ont., [illegible]. The storage capacity is about [illegible] bush.

Sault Ste. Marie Canals Traffic

[illegible]

Atlantic and Pacific Ocean Marine.

The Norwegian s.s. Bjorgvin, bound from Pugwash, N.B., ran ashore near Charlottetown, P.E.I., Oct. 5, during a heavy fog, and it is feared will become a total loss.

G. M. Bosworth, Vice President, C.P.R., is reported to have stated in Montreal, Oct. 3, that the company would withdraw entirely from the North Atlantic Conference, which regulates steamship passenger traffic between Europe and America.

During September, 65 ocean going vessels arrived in Montreal harbor, compared with 57 in September, 1912, and from the commencement of the St. Lawrence season to Sept. 30, 366 vessels arrived, against 302 for the same period 1912.

The Union Steamship Co. of New Zealand, operating the Canadian-Australian mail line, will, it is reported, place an order shortly for another vessel for the service, of a similar type to the s.s. Niagara, a recent addition, but larger, possibly about 16,000 tons.

The C.P.R. s.s. Mount Temple, which recently grounded in the St. Lawrence just outside Montreal harbor, was docked in the Canadian Vickers dry dock at Montreal for examination and repairs Oct. 3. A number of plates were found to be damaged, but the whole of the work was done in the dock, and she resumed her service a few days later.

Promoters of the scheme for establishing a fast steamship service between the west coast of Ireland, and Cape Charles on the Labrador coast, were reported to have been in Ottawa recently to urge the proposal on the Government and to request a bond guarantee or other aid. It is stated that a request has been made for a bond guarantee for $15,000,000.

The s.s. Imperator, the largest steamship afloat, which is scheduled to sail from Hamburg for New York Nov. 1 on her last trip of the season will, on her return to Europe, be docked at Liverpool for a general overhauling. It is stated that the decision to dock her at Liverpool has been arrived at because there is no other dock available of sufficient dimensions for a vessel of her size.

The s.s. Ceranus, under charter to the Dominion Government for the carrying of supplies, etc., to Port Nelson on Hudson Bay, was reported, Oct. 1, to have been wrecked within a short distance of her destination. The vessel and cargo is said to be a total loss. As the wireless telegraph equipment for the station connecting with the one at Pas, Man., was on board, it is stated that the inauguration of a wireless telegraph service between these two points will be delayed nearly a year.

The Royal Mail Steam Packet Co.'s new s.s. Cardiganshire is announced to sail from London, Eng., Dec. 20, for Victoria, B.C., and other North Pacific ports by way of the Suez Canal and the Orient. She will be followed by other vessels of similar type, now under construction, and which will be placed in service as they are completed. In the same service, the s.s. Monmouthshire was scheduled to sail from London, Oct. 25, to be followed, Nov. 22, by the s.s. Glenroy.

In dealing with the C.P.R. annual report for the year ended June 30, at the annual meeting Oct. 1, the President, Sir Thomas Shaughnessy, announced the issue of £1,000,000 consolidated debenture stock at 4%, in part to pay for the two steel twin screw passenger steamships of the intermediate class for the Atlantic Service. These vessels will be about 500 ft. long, with beam about 64 ft., and a moulded depth of about 41 ft., and will be equipped with quadruple expansion engines, and have a tonnage of about 11,600. These vessels, details of which we have already given, are under construction at Glasgow, Scotland.

The C.P.R. has decided that during the forthcoming winter its steamships Empress of Britain and Empress of Ireland will make Halifax, N.S., their terminus, and will not, as hitherto, merely call there to disembark passengers and mail. When interviewed on the subject recently, Sir Thomas Shaughnessy is reported to have stated that the call at both Halifax and St. John involved undue risk in making the trip between the ports in all sorts of weather, and that as the company's other vessels would continue to go to St. John, which was the company's winter port, and in view of the large number of other vessels using this port, he considered the facilities would be overtaxed if the Empresses were added. The arrangement is only a tentative one, and subject to revision when the St. John harbor and wharf facilities are arranged so as to accommodate the ocean traffic naturally tributary to the port.

Maritime Provinces and Newfoundland.

It is reported that work will be commenced shortly on the construction of a marine slip at Southport, P.E.I., an appropriation of $2,500 for which was included in the last parliamentary estimates. The slip will be built between Hillsboro bridge and the wharf.

The Department of Public Works has completed the dredging of a channel 333 ft. wide in the harbor at Yarmouth, N.S. It extends for 1,800 ft. inside of Bunker Island southwest light, locally known as the Bug light. In the channel there is a patch with 18½ ft. of water immediately eastward of Sollows rock, and 60 ft. from the east edge of the channel, which will be removed before the close of the season, but there is no danger to any vessel in midchannel.

The Department of Marine announces the establishment of a lighthouse on Ferolle Point, on the west coast of Newfoundland, in the Gulf of St. Lawrence. It is situated one third of a mile northward of the extremity of the point, about 350 ft. back from the water edge and 39 ft. above high water mark. The structure consists of a hexagonal tower, with six buttresses and a circular lantern. The tower is white, 64 ft. high from base to lantern vane, and the light is of the third dioptric order, burning petroleum vapor under an incandescent mantle of 40,000 candle power, and is visible for 15 miles from all points of approach by water.

Province of Quebec Marine.

Capt. Wotton, of the Canadian Northern s.s. Royal Edward, demonstrated his patent boat releasing gear before the Montreal Harbor Commissioners recently.

It was stated recently by H. Driver, Secretary, Canadian Vickers, Ltd., Montreal, that it was expected the whole of the work of reclaiming and making the land on the site of the dry dock in Montreal harbor would be completed by the end of the season, or that only a negligible portion would be left over to be completed in the spring.

The construction of the grain elevator on the Louise Embankment at Quebec is proceeding rapidly, and it is expected that the building itself will be completed during November, and the machinery installed ready for operation by the opening of navigation next spring. It has been designed for a storage capacity of 3,000,000 bush., the first unit now approaching completion having 1,000,000 bush. capacity.

The Marine Department has established a telephone line for the protection of shipping between the life saving station on the west side of Devil Island and the Nova Scotia Construction Co.'s office near Halifax, N.S. There is a land line on Devil Island, a cable from the Island to the mainland, and a land line from the company's office, which are connected with Dartmouth and Halifax.

The Marine Department has placed in operation on the southerly summit of Flat Island, in the Gulf of St. Lawrence, a lighthouse showing a white flashing light of the fourth dioptric order, 15,000 c.p., burning petroleum vapor under incandescent mantle. The tower is 34 ft. from the base to the vane of the lantern, and the light is visible for 14 miles all around the horizon. A similar one has also been established, of 25,000 c.p., and a range of visibility of 16 miles, on St. Mary Island, in the Gulf of St. Lawrence.

Ontario and the Great Lakes.

The second of the two dredges under construction at Collingwood for the Dominion Government was launched there Oct. 6.

Press reports from Winnipeg state that the C.P.R. has sold its elevators A and C at Fort William, Ont., to James Richardson and Sons, Ltd., Kingston, and granted long leases of the sites occupied.

The s.s. Prince Rupert, owned by the Calvin Co., Garden Island, Ont., and the s.s. W. D. Rees, owned by the Wilson Transit Co., Cleveland, Ohio, collided just above the Canadian canal at Sault Ste. Marie Sept. 30. Both were considerably damaged.

The Richelieu and Ontario Navigation Co.'s s.s. Bickerdike, which ran ashore in Lake St. Louis, Oct. 13, was floated the next day, after having had a considerable portion of her cargo of grain removed by the Montreal Harbor Commissioners' floating elevator.

The U.S. Lake Survey s.s. Surveyor, which has been carrying out operations in the east end of Lake Ontario, has developed a minimum depth of but 8 ft. below water datum on the Big Bar shoal, south of Amherst Island. At the chart plane of standard low water, the depth is 7 ft.

The Ontario Car Ferry Co. is preparing plans for a car ferry to operate between Cobourg and the south shore of Lake Ontario as an addition to the service now being performed by its car ferry Ontario No. 1. Press reports to the effect that a contract for its construction has been awarded are incorrect.

The Minister of Marine, while in Prescott, Ont., Oct. 2, stated that additional property had been secured for the enlargement of the Government lighthouse depot there, and that a considerable amount of the material for lights and buoys, now being imported, would, in future, be manufactured at the enlarged depot.

The Dominion Government dredge Port Nelson, which was built by Polson Iron Works, Toronto, for work in the Port Nelson harbor, Hudson Bay, and which has been fully described in previous issues, arrived at Port Nelson, Sept. 27, after its long voyage from Toronto, in tow. The time occupied between Sydney and Port Nelson bar was 20 days and 6 hours.

The s.s. City of London, owned in Chicago, Ill., which was sunk near Pelee Island, in Lake Erie, by collision with the s.s. Joseph S. Morrow recently, is considered a total loss. It is said that the wreck will probably be left until removed by the Dominion

Government. She was built in 1891, her dimensions being:—Length, 297, ft.; breadth, 41 ft.; depth, 23 ft.; tonnage, 2,005 gross, 1,675 register.

The Dominion Dredging Co., contractors on section 1 of the Welland Ship Canal, commenced dredging operations, Oct. 9, placing a dredge and two tugs about 2,000 ft. from the shore, where the new Lake Ontario entrance will be. Quinlan and Robertson, subcontractors under O'Brien and Doheney, general contractors for section 3, have commenced operations with one steam shovel at Thorold, and have another nearly ready for work.

The name of the s.s. Chili, which has been purchased in Chicago, Ill., and transferred to the Canadian register, has had its name changed to Sarnian. She is a steel vessel, built in 1895, equipped with triple expansion engines with cylinders 20, 33 and 54 ins. diar. by 40 ins. stroke, supplied with steam by two Scotch boilers, each 12½ by 11½ ft., at 170 lbs. Her dimensions are:—Length, 324 ft.; beam, 42 ft.; depth, 27 ft.; tonnage, 2,584 gross, 1,845 register.

Tenders for the removal of a triangular section of the west bank of the Detroit River, in order to widen the approach to the Livingstone Channel, are under consideration of officers of the U.S. War Department at Detroit, Mich. It is stated that the lowest tender is $1.90 a cub. yd. for material excavated, and 60c a sq. yd. for clearing and sweeping a small portion of the area. The estimated quantity of rock to be removed is quoted as 43,500 cub. yds., widening the approach about 200 ft., the estimated cost of the work being $200,000.

The United States Lake Survey reports the levels of the Great Lakes in feet above tidewater for September as follows:—Superior, 602.83; Michigan and Huron, 580.93; Erie, 572.76; Ontario, 246.74. As compared with the average September levels for the past ten years, Superior, Michigan and Huron were 0.05 ft. above, Erie 0.33 ft. above and Ontario 0.46 above. It was anticipated that Superior would remain stationary during October and that Michigan and Huron would fall about 0.2 ft., and Erie and Ontario about 0.3 ft.

The St. Lawrence and Chicago Steam Navigation Co. is issuing $140,000 capital stock, being the balance of an authorized $1,000,000. It is offered to shareholders of record on Nov. 15 at par in the proportion of one new share to six shares held. The amounts are payable, 25% on Dec. 15 and the balance on Jan. 5, 1914. The amount realized will be used to pay for an additional steamship of the same capacity as the s.s. James Carruthers, and it will be built at Collingwood. The new vessel will probably be ready for service by the fall of 1914.

The Montreal Transportation Co. is acquiring the s.s. Prince Rupert, and the barges Burma and Ceylon from the Calvin Co., Garden Island, Ont., for operation on the Great Lakes and St. Lawrence route. The Prince Rupert was built at Dumbarton, Scotland, in 1908, and is screw driven by engine of 170 n.h.p. Her dimensions are:—Length, 249 ft.; breadth, 43 ft.; depth, 19.5 ft.; tonnage, 1,908 gross, 1,172 register. The Burma was built at Garden Island in 1901, her dimensions being:—Length, 183.6 ft.; breadth, 39.5 ft.; depth, 15 ft.; 885 tons, and the Ceylon was built at Garden Island in 1891, her dimensions being:—Length, 205.4 ft.; breadth, 36.3 ft.; depth, 15.2 ft.; 908 tons.

The Northern Navigation Co. has practically decided to remodel its s.s. Huronic, so far as the cabin accommodation and upper works are concerned, so as to make her equal in accommodation to the company's steamships Hamonic and Noronic. It is not the intention to have this work carried out during the forthcoming winter, as the time is too short in which to obtain the necessary material, and have the vessel ready for service on the reopening of navigation next spring. The present intention is to carry out the alterations without lengthening the vessel. The matter will be taken up in time next year, and tenders will probably be called for during the summer for carrying out the alterations during the winter of 1914-15.

The attempt to raise the Keystone Transportation Co.'s s.s. Keystorm, which is lying in deep water near Kingston, will be watched with considerable interest, as, owing to the position occupied by the wreck, and being in very deep water, it is considered that, if successful, it will be one of the most remarkable achievements in the use of compressed air in salvage work. All the work will have to be done under water, such as covering hatches, connecting air hose and placing air locks, etc., after which the real work of the air men will commence. They will descend through the air-locks to the holds, repair any breaks and reclaim as much of the hold space as possible. Each hold will thus be worked separately until sufficient buoyancy is obtained to float the vessel, when air will be put on all the holds and an attempt made upper works are concerned, so as to make to bring her to the surface. So far, in the use of compressed air for salvage purposes, there has been no failure, but the present case is considered an extreme one, and A. J. Lee, Westmount, Que., who has undertaken the work, is doing it chiefly with the view of developing certain theories of his own in this line.

Manitoba, Saskatchewan and Alberta.

The Winnipeg Harbor Commissioners have drawn up a comprehensive scheme of harbor development, and it is reported that the Dominion Government will be asked to include $100,000 in the next estimates, for a series of docks on the Red River.

British Columbia and Pacific Coast Marine.

The Dominion Government has awarded the contract for the construction of a wharf in Victoria harbor, at a cost of $15,124.40, to Macfarlane, Pratt and Hanley.

Navigation on the Yukon River for points north of Dawson, was announced to close for the winter by the sailing of the steam boat Norcott from Dawson, Oct. 17.

The Dominion Government is reported to be having plans prepared for the construction of a dredge for use on the interior waters, at an approximate cost of $100,000. The dredge is being designed by Cartwright, Matheson and Co., consulting engineers, Vancouver.

Press reports from Vancouver, state that O. L. Dickeson, President, White Pass and Yukon Ry., has announced there, that the company will start a direct passenger steamship service from Vancouver to Skagway, Alaska, using vessels which will be built at a cost of about $1,000,000 each.

The All Red Line, Ltd., operating the s.s. Selma out of Vancouver, in the coast trade has transferred its vessel from the British, to the Canadian, register. The Selma, which was formerly known as Santa Cecilia, and was built at Glasgow, Scotland, in 1881, is screw driven by engine of 80 n.h.p. Her dimensions are, length 141.8 ft., breadth 22.1 ft., depth 11.6 ft.; tonnage 203 gross, 96 register.

The s.s. Rupert City, owned by the Marine Transportation Co., Vancouver, has been sold to United States purchasers and has been transferred to the U. S. register. She was built at Barrow in Furness, Eng., in 1886, and is screw driven by engines of 300 n.h.p. Her dimensions are, length 310.3 ft., breadth 38.1 ft., depth 25.2 ft.; tonnage, 2,536 gross, 1,640 register.

A press report from Victoria states that the Dominion Public Works Department will shortly award contracts for the equipment of all its tugboats and dredges with the necessary apparatus to enable them to use oil as a fuel. It is stated that there are about 15 of such vessels in operation on the Pacific coast, some of the dredges being very powerful vessels consuming large quantities of coal. It is also stated that reservoirs for oil will be built at Victoria and Vancouver to act as bases of supply.

The C.P.R. s.s. Princess Maquinna has resumed her service to the west coast of Vancouver Island, after having undergone repairs necessitated by grounding while on her recent trip to Alaska ports with members of the Geological Convention. The C.P.R. is asking the Dominion Government to provide better wharfing accommodation at ports on the west coast touched by this vessel, and it is reported that should nothing in the way of improvement there be done, the Princess Maquinna may be withdrawn from the service.

It is reported that the C.P.R. s.s. Beaver, which has been run on the New Westminster-Chilliwack route for several years, has been withdrawn from the service on account of having been operated at a loss since the opening of the British Columbia Electric Ry. line between the points named. She was built at Victoria in 1898, and was originally intended for the Yukon trade during the Klondyke gold rush of that year, but was taken over by the Canadian Pacific Navigation Co., which was later absorbed by the C.P.R.

Sir Thomas Shaughnessy, President, C.P.R., in dealing with the report for the year ended June 30, at the annual meeting, Oct. 1, announced the issuing of £1,000,000 consolidated debenture stock at 4%, in part to pay for the two first class steel two compartment turbine passenger steamships, for the British Columbia Coast Service. These vessels will be about 395 ft. long with beam 54 ft., and moulded depth of 20 ft., and will be propelled by two independent sets of Parsons compound steam geared turbine engines, and will have a tonnage of about 5,000. They have already been dealt with in Canadian Railway and Marine World and are under construction at Dumbarton, Scotland.

British Columbia and United States papers have recently renewed the reports which have been circulated at regular intervals during the past two years, to the effect that the Canadian Northern Ry. has awarded contracts for the construction of two turbine steamships, to be named Duke of Connaught and Duke of Clarence, for a service between Port Mann, Vancouver and San Francisco, with possible calls at Victoria. The older reports are amplified by the statement that the vessels have been actually ordered, and are in fact now being built at Glasgow, Scotland. In connection with these reports, Canadian Railway and Marine World has had occasion frequently to state that no doubt when the C.N.R. line is completed, a coast steamship service will naturally follow, but we are officially advised that no such order as that mentioned has been placed.

As announced in our last issue, under Canadian Notices to Mariners, the Department of Marine has installed a submarine bell on the light ship stationed on the Sandheads off the Fraser River in the Strait of Georgia. It is probable that this installation will be followed by others if a sufficient number of steamships operating on the Pacific will supply themselves with the necessary receiving apparatus. The Department has a number of these installed along the Atlantic, and on inland waters, and it is expected that the number will be materially increased during next year. Experience has shown that bells placed on stands on the bottom, and bells electrically connected with the shore cannot be kept in operation with sufficient reliability to be satisfactory, and the Department's later installations are now placed from a light ship, where they can be raised for examination and overhaul without delay, or they are attached to a buoy and rung by the action of the waves alone.

The Burning of the s.s. Volturno.

The s.s. Volturno, which was burned at sea Oct. 10, when a number of lives were lost, was owned by Canadian Northern Steamships Ltd., Toronto, and operated under charter by the Uranium Steamship Co., a British concern, on a line between Hamburg, Halifax and New York. D. B. Hanna, Second Vice President, Canadian Northern Steamships Ltd., Toronto, is representative of the Uranium Company in America. The Volturno, which was bought about the end of 1909, on the incorporation of Canadian Northern Steamships Ltd., was built at Glasgow, Scotland, in 1906: She was of steel construction, and of the following dimensions:—length 340 ft., breadth 43 ft., depth 20.7 ft., tonnage 3,581 gross. She had accommodation for about 1,300 third class passengers and about 24 cabin passengers. The absolute necessity of having all transatlantic passenger steamships equipped with wireless telegraph apparatus was again demonstrated by the success which attended its use in this case, as within a comparatively short time of the distress signals being dispatched, sufficient help was at hand, though the heavy seas hampered the work of removing the passengers. Another interesting detail of this work is undoubtedly the use of oil in calming the sea. A large quantity was poured from an oil tank steamship, and there is no doubt that this enabled a greater number of lives to be saved than would otherwise have been the case.

Great Lakes Navigation and the Montreal Route.

A deputation representing navigation companies operating on the Great Lakes waited on the Ministers of Marine and of Trade and Commerce in Ottawa Oct. 17 to discuss a number of matters. The chief subject dealt with was the coasting regulations. Last year the coasting regulations were suspended in order to allow U.S. vessels to load grain at Port Arthur and Fort William, where they were to remain for the winter, and then proceed to a Canadian port on the opening of navigation in the spring. This was done with the view of obviating congestion at the head of the lakes, and providing additional storage accommodation for grain during the winter. At the time, the Dominion Marine Association opposed the suspension of the regulations in this respect, but did not press the matter very vigorously, as it was designed to relieve an abnormal condition, but it is now presenting a vigorous opposition to a renewal of the suspension for the coming winter. The ground taken by the Association is that if the Dominion Government allows such a suspension this year, it should only be done on the condition that the U.S. Government should abrogate its dues and limitations so as to allow free entry to U.S. ports of Canadian shipping in a similar manner. On this matter, the Minister of Trade and Commerce stated that no decision had been reached or considered.

The question of rates between the head of the lakes and Georgian Bay ports was also discussed. It had been stated that these rates were higher than those of U.S. vessels from the same ports to Buffalo, and it is contended that this is not so, figures being quoted to show that on the general average the Canadian rates are as low as those on the U.S. route. The Minister of Trade and Commerce, in dealing with the matter, stated that in 1912 over 40% of the wheat from the west went out by way of Buffalo, and this year the proportion promises to be larger, and it is believed that the question of rates has a material bearing on the subject. Figures compiled by the Railways and Canals Department show the Canadian lake rate to be higher than the U.S. rate; the rate from Fort William to Buffalo being 0.103, and from Fort William to Georgian Bay ports 0.163 per ton per mile. We stated that shipping men are inclined to place the blame for the divergence of traffic on the Montreal end, alleging a lack of facilities there, and maintaining also that a large factor is more favorable insurance rates at U.S. ports. Another influence is the uncertainty of ocean tonnage from Montreal.

Wreck Commissioner's Judgment Reversed in the Lake Manitoba Case.

The Dominion Government has reversed the judgment of the Wreck Commissioner, Commander H. St. G. Lindsay, re the grounding the C.P.R. Lake Manitoba on the Isle of Orleans, July 28, by which judgment, A. Lachance, the pilot, who is President of the Corporation of Pilots of Quebec, was suspended until the completion of the present season of navigation. After hearing the evidence in the case, the Wreck Commissioner, assisted by two assessors, came to the conclusion that the casualty was entirely due to the negligence of the pilot, inasmuch as he totally disregarded the rule of the road in porting for a bright light on his port bow, and also in not being aware of the exact position of his vessel with regard to the land. The pilot has now been reinstated, the reason as published, being that he has always been regarded as an efficient officer, and that it has been urged that as conditions of navigation in the river are constantly changing, a pilot under temporary suspension would have no knowledge of the changes when he resumed his calling, and it is stated that the reinstatement is regarded as being in the interests of navigation.

It is a question whether it is good policy to interfere with a judgment to the extent of practically reversing it, especially when neither the evidence nor the finding is questioned. The grounds quoted for the reinstatement of the pilot have no connection with either the evidence or the judgment, but are quite outside all the points concerned, and such a decision can only mean, to carry the thing to its logical conclusion, that in future no sentence of suspension can be passed on any pilot. In view of this the Pilotage Act should be amended forthwith, and the pilot of the New Zealand Shipping Co.'s s.s. Whakatane, who was recently suspended, should be immediately reinstated. At least, one of the weak points of the reason given for Pilot Lachance's reinstatement is that he has already been under suspension for nearly three months, and the navigation season has only another month to run, so if any loss of knowledge of the condition of affairs in the St. Lawrence was likely to occur, it has already taken place, and any further problematical loss of knowledge for the remainder of the season would not much matter.

The matter has given rise to considerable comment in marine circles, and a number of suggestions have been made to obviate what is becoming a ridiculous state of affairs. Some of these cover the entire removal of wreck investigations from the jurisdiction of the Marine Department, making the Wreck Commissioner's Court subsidiary to the Department of Justice, and depriving the Marine Department of any right to revise judgments and sentences, and also fining only of pilots for errors of judgment, etc., which result in the damage to, or loss of, a vessel, grading such fine according to the gravity of the offence, and extending payments over a stated period, by deducting a percentage from fees due the pilot for services rendered to each vessel during that period. There are certainly some good points in the suggestions mentioned, especially the bringing of the Wreck Commissioner's Court under the Department of Justice, leaving one of the superior courts of justice to be the final court of appeal in all matters pertaining thereto. In all cases where a pilot has committed any offence under the Pilotage Acts, in addition to a fine, the conviction should be endorsed on his license.

Since the foregoing was put in type, we have been officially advised that the Minister of Marine made a full and careful enquiry into all the facts of the case, and having satisfied himself that the period for which the license in question was suspended might be shortened, he so ordered and the license was accordingly returned to the pilot forthwith.

This confirms our opinion, as previously expressed, that decisions of the Wreck Commissioner should not be subject to reversal by the political head of a government department, on whom political influence may be brought to bear, but should be only appealable to a judicial body.

Welland Ship Canal Contracts Awarded.

The contract for section 2 of the Welland Ship Canal is reported to have been awarded to Baldry, Yerburgh and Hutchinson, a British firm with a branch at St. Catharines, Ont. The amount of the contract is approximately $5,500,000. Section 2 extends from bridge 2 to bridge 5, about 4½ miles, and includes locks 2 and 3. Lock 3 will be located immediately north of the present canal, and at its head on the east side will be an equalizing basin or pond of 150 acres. Below lock 3 there will be a heavy cutting through Homer village to the bed of Ten Mile Creek above Carleton St., St. Catharines, and just below Carleton St., lock 2 will be located. The canal at the head of lock 2 will be at an elevation of 335½ ft. above sea level. Full details of the complete work, including lock construction, were given in Canadian Railway and Marine World for July and August.

The contract for section 3 was awarded to O'Brien and Doheney, and Quinlan and Robertson, Montreal, jointly, and not to the first named firm only, as mentioned in our last issue.

The Edward Sinclair Lumber Co., Newcastle, N.B., have been given a contract for 41,000 ties for the construction railway in connection with the new canal.

The Department of Public Works will receive, to Nov. 17, tenders for the construction of a pile protection work at Rainy River, Thunder Bay and Rainy River District, Ont.

Telegraph, Telephone and Cable Matters

T. G. Galbraith, heretofore chief clerk to Superintendent, Ontario Division, C.P.R. Telegraphs, Toronto, has been appointed Inspector, C.P.R. Telegraphs, Ontario Division, Toronto.

R. N. Young, heretofore Superintendent of Telegraphs, Saskatchewan Division, C.P.R., has been appointed Superintendent of Telegraphs, Alberta Division, vice D. Coons, who has been appointed Superintendent of Telegraphs, Saskatchewan Division.

The Canadian Northern Telegraph Co. has opened offices at Algar, and Vista, Man., and has closed its office at Birch River, Man. Telephones have been installed at Hafford, Speers and Richard, Sask., and messages are accepted for these places, via Denholm, Sask.

The report of the Marconi Wireless Telegraph Co. of Canada for the year ended June 30 was presented at the annual meeting at Montreal Oct. 1. The statement shows a considerable improvement over the previous year, there being a profit of $62, against a net operating loss of $5,467 for 1911-12. The balance sheet shows assets of $5,573,959. The directors were re-elected.

D. H. Bowen, heretofore Assistant Superintendent, Ontario Division, C.P.R. Telegraphs, Toronto, has been appointed Superintendent, Lake Superior Division, C.P.R. Telegraphs, Sudbury, Ont., vice F. T. Jennings, resigned to enter private business. The position of Assistant Superintendent, Ontario Division, C.P.R. Telegraphs, has been abolished.

The erection of the steel tower for the Universal Radio Syndicate's wireless telegraph station at Newcastle, N.B., is practically complete. The steel arrived from England Oct. 2. The plant will occupy about 54 acres, and there will be the steel tower 506 ft. high, and 6 wooden towers, each 300 ft. high, all on concrete foundations. It is stated that it will have a 40 kilowatt station, with a voltage of 1,000, and that it will be the most powerful station in the world.

The Dominion Government wireless telegraph station at Pas, Man., which will be operated chiefly in connection with a similar station to be erected at Port Nelson on Hudson Bay, is practically complete. Owing to the wreck of the vessel in Hudson Bay, which was carrying the construction material and equipment for the Port Nelson station, all of which is entirely lost, the completion of the station at the latter point will be delayed, possibly for a year.

Among the Express Companies.

The American Ex. Co. has closed it offices at Port Hope and Cobourg, Ont.

W. F. Campbell has been appointed acting agent, Dominion Ex. Co., Charlottetown, P.E.I., vice G. Waller, resigned.

The Board of Railway Commissioners has extended the collection and delivery area for express companies in Ottawa by including the Isolation Hospital.

W. C. McGonegal, heretofore agent, American Ex. Co., Cobalt, Ont., has been appointed agent at North Bay, Ont., vice H. C. M. Parritt, transferred to Toronto.

The Board of Railway Commissioners has established express delivery and collection limits for Knowlton, Que., and Kelowna, B.C.

The Canadian Northern Ex. Co. has opened offices at Algar and Vista, Man. The office, which it was announced would be opened at Gravelburg, Sask., will not be opened.

The American Ex. Co. and the National Ex. Co., which, as stated in our last issue, had for many years carried on their business in Montreal under a joint arrangement with the Canadian Ex. Co., in the latter company's offices, commenced their operations apart from the Canadian company, at new offices, 231 St. James St., Oct. 1. J. B. Davies has been appointed General Agent, American and National Ex. Cos., A. B. Howard will be in charge of the financial departments, and G. H. McGrane of the foreign freight department, as heretofore.

The Canadian Ex. Co.'s receipts and expenditures in the United States, for April, as reported to the Interstate Commerce Commission, show total receipts from operation, $276,922; express privileges, $121,473; total operating revenue, $155,488; total operating expenses, $130,814; net operating revenue, $24,634; taxes, $3,000; operating income, $21,634. As compared with the same month of 1912, there is a general increase, that for the total receipts from operation being $17,814, and for the net income $3,466.

Book Reviews.

Any of the books reviewed may be obtained through Canadian Railway and Marine World at the published price.

SAFETY FIRST—By Geo. Bradshaw. 130 pages, 5 by 7½ ins., 99 illustrations, paper covers. McGraw-Hill Book Co., New York. 50c.

Coming at a time when the subject of safety in all walks of life is receiving so much consideration, this book is particularly valuable. For the purpose intended, it leaves little to be desired, as the information contained is set forth in such a concise and interesting manner as to make it acceptable to all classes of railway employes. A great many men will not wade through a lengthy discourse on a subject, but if the same subject is outlined for them graphically, it is rarely that an unappreciative reader is found. In this book, the 99 illustrations graphically depict unsafe conditions as they actually exist, and in some instances the remedy for the condition is also illustrated. The reading matter is confined to a short paragraph (with few exceptions), accompanying each illustration, making the persual of the book most interesting. About two thirds of the book is devoted to general railway conditions, the balance covering special shop conditions. While the book primarily covers railway conditions, there will be found in it many valuable suggestions that may be applied to other lines of industry.

BLUE BOOK OF AMERICAN SHIPPING—367 pages, 10 by 7¼ ins. Price $5. Penton Publishing Co., Cleveland, Ohio.

The 1913-14 edition, which is revised to date, lists all the U.S. vessels on the Atlantic and Pacific coasts and the Great Lakes and western rivers, ship owners, ship, engine and boiler builders, manufacturers of gas and gasoline engines, naval architects, marine engineers, admiralty lawyers, ship chandlers, wrecking companies, etc. The Canadian section contains a list of vessels on the Great Lakes, names of shipping officials, and leading particulars of the Dominion Government graving docks, and of the canal system. In addition, there is a quantity of general information and statistics relative to seaboard and inland marine, and particulars of the various associations associated with the marine interests. While a considerable amount of the matter quoted relates to naval and seaboard matters, special attention seems to have been given to shipping and general traffic on the inland waters, which is of more immediate concern to those for whom the book is intended.

A Safety Exhibit Car for use in connection with the work of the safety department of the New York Central Lines has recently been put in service. It will serve as an instruction car, in teaching the principles of safety first to the employes. Along each side of the car are models of the machines used in the different shops to safeguard the workmen against injury. By means of photographs arranged on the walls, the safe and the unsafe methods of doing various kinds of work are depicted. Other framed pictures show how it comes about that, annually, over 10,000 trespassers are killed and injured on railways in the U. S.

The Department of Trade and Commerce is asking for tenders to Nov. 5 for the construction of a grain elevator with a capacity of 1,500,000 bush. at Port Nelson, Hudson Bay.

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Canadian Railway and Marine World.

December, 1913

The Railway Viaduct Along the Toronto Waterfront.

By Frederick H. Moody, B.A.Sc.

Most of the trains entering Toronto come in on the Esplanade, along the waterfront, crossing most of the streets in the central portion of the city at grade. This has been a menace to street traffic which the city has been agitating for years to have remedied. This, in conjunction with a new union station, which it was desired to have built at the same time, was considered by the Board of Railway Commissioners early in 1909, and the Board passed an order in June, 1909, ordering the elevation of the tracks along the waterfront, as well as the building of a new station for the joint use of the G.T.R. and C.P.R. The time limit set by the board was two years, the cost to be borne equally by the two railways and the city.

This original order called for a four track viaduct from west of John St. to near Berkeley St., with three tracks each side of the viaduct on the Esplanade level, with all necessary crossovers, the centre line of the viaduct to be located on the southern boundary of the Esplanade, the work to be undertaken jointly by the G.T.R. and C.P.R. with the city. Independently of this, the C.P.R. was ordered to elevate two tracks from the easterly end of the foregoing viaduct to near Queen St., with necessary viaducts over intervening streets. The corresponding section of the G.T.R. line was also ordered elevated on a two track viaduct from the same point to Logan Ave., crossing the intervening streets on viaducts. All the tracks in this whole length of viaduct as ordered, with the exception of the two crossings at John St. and Spadina Ave., which cross on bridges, have the streets passing beneath the tracks. The city was ordered, in addition to paying one third of the cost of the viaducts, both the joint and the separate, to bear the same proportion of the expense of elevating the C.P.R. passenger car yard, the G.T.R. Don sorting yard, the bridges at Spadina Ave., John St., and Eastern Ave., and the substructures for the new union station. In addition to these liabilities on the part of the city, the latter could collect no damages for city property taken for the proper carrying out of the project. Any question of damages between the two companies was to be taken before the Board for adjustment.

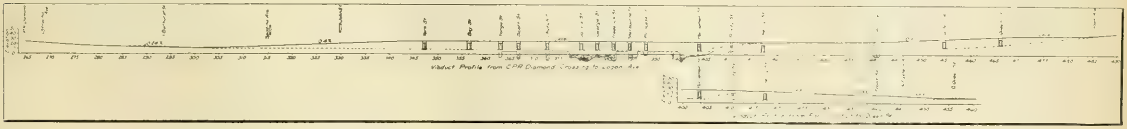
At that time, the C.P.R. management spoke of removing a large portion of its passenger service to a union station to be built in conjunction with the Canadian Northern Ontario Ry. in the northern section of the city, on its West Toronto-Leaside line, and thus release itself from the congestion and crossing troubles in the lower part of the city. In view of this, the C.P.R. took exception to being included in the viaduct and union station project, and appealed the matter to the Board, which in May, 1912, again ordered the viaduct to be built under the original order, with a further extension of two years for its completion, the original two years having by then expired. At the same time, the board approved the G.T.R. plans as the more desirable, and ordered that they be followed, instead of the plans submitted by the C.P.R. for the same proposition. These plans, as ordered to be followed, were described in detail in Canadian Railway and Marine World for Aug., 1912.

Last year, the Toronto Harbour Commission was formed to take over all the waterfront properties of the city and formulate plans for a comprehensive harbour scheme. As the proposed viaduct would follow the waterfront through practically its full length, this commission was vitally interested in the manner in which the railways would develop that section, and in consequence the two railways, the city and the commission decided to consult each other in formulating of plans that would, in the combined opinion of the four parties, make for a better viaduct scheme. The result of a series of conferences was the preparation of an entirely new set of plans which it was considered would meet the city's requirements more satisfactorily and work in with the general harbour scheme then being evolved by the commission. The scheme as developed was approved by the four parties, an agreement, dated July 29, 1913, being drawn up on the basis of the new plans.

These substitute plans were presented to the Board of Railway Commissioners, and as it appeared that the works agreed to be undertaken by the four contracting parties of the agreement would be performed on the terms and in the time specified therein, and as all the parties were making application to the board for their approval, the board passed order 19926, July 31, 1913, giving full effect to the agreement and authorizing and approving the construction and maintenance of the works provided in the agreement. Briefly, the order approved the substitution of the new plans for the viaduct for those accompanying the original order 7200, ordering that the work be completed within three years from July 29, 1913. Also, all questions reserved for ultimate determination under former orders 7200, 13568, 16019 and 17033, as well as the necessity for amendments to or recission of the whole, were reserved for further consideration by the board on hearing the parties. All changes in the plans as may be required must be approved by the board.

The plans as approved are shown in the accompanying sectional illustrations, which show the scope of the work, from the C.P.R. diamond crossing west of Bathurst St. on the west, to Logan Ave. on the east. The grade separation work in the west end of Toronto, undertaken by the G.T.R. in 1910-12, terminates at the C.P.R. diamond crossing west of Bathurst St., which is the ruling point on that section of the work, the diamond remaining at its former elevation. From that point easterly the tracks through the city will be elevated, with a consequent rearrangement of many of the yard tracks and spurs.

The principal variation in the route through the city from that laid down in the former plans, is in the section from Yonge St. easterly to the Don River, which will follow a straight line, instead of the sweep northerly along the Esplanade. To do this, a large portion of the land south of the present right of way will have to be expropriated, and as the new line will run across water lots, there will be a great deal of filling. The principal advantage in the new route will be the facility offered to the construction parties in carrying forward the work uninterrupted from the necessity of maintaining the regular train service as would be required if the former right of way were followed. As the route at present followed is comparatively narrow, with both sides occupied through the greater part of the route by buildings where it would be impossible to secure temporary space for use during construction, it would be practically an impossible task to elevate the tracks and at the same time maintain the service without serious interruptions. With an entirely new right of way through the more difficult section, this phase of the work is simplified. Another advantage to the new line is that the through tracks will follow a tangent from Spadina Ave. on the west to Parliament St., nearly 1¾ mile.

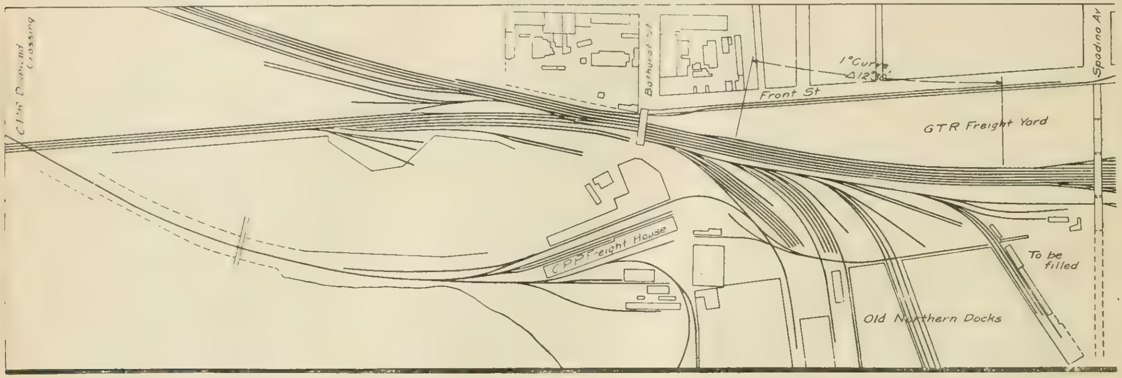


Profile of Viaduct Scheme, Including Independent Eastern End Viaducts.

From the west, the grade revision completed to that end of the city, brings the tracks on a descending grade of 0.25% to the C.P.R. diamond crossing, continuing on the present grade to a point midway between Strachan Ave. and Bathurst St. From this point to near Bathurst St., the line is through the old cutting, with no change from the present conditions. In consequence, the bridge across the tracks at Strachan Ave. will not be done away with, but it is said that the present wooden bridge will be replaced by a more modern steel structure, but this will be apart from the viaduct proposition. From there to just east of Bathurst St., there will be no change in existing conditions, the steel bridge across Bathurst St. remaining.

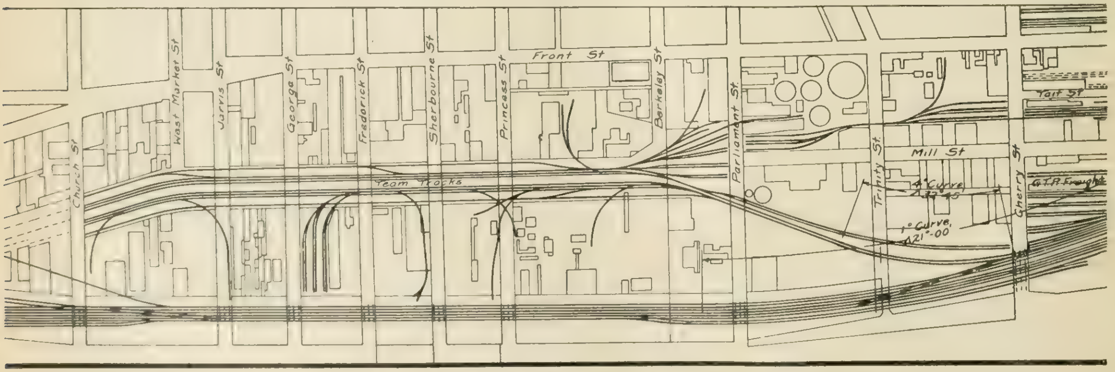
To this point the line will be a tangent, changing there to 1 degree curve through 12½ degrees, terminating at Spadina Ave., from which point the line will be again tangent. From the point of curvature at Bathurst St., the line will commence to ascend to the viaduct on a 0.4% grade, reaching elevation 26.5 at York St., from which point easterly to the Don River the line will be level at an elevation of 18 ft. above the present base of rail.

From Strachan Ave. to Bathurst St. there are four tracks, but just west of Bathurst St., the G.T.R. old main line and the C.P.R. main line join from the west, there being 7 tracks under the bridge. East of this the lines will diverge to the different yards and sidings, requiring long highway bridges to carry Spadina Ave. and John St. over the tracks. The present G.T.R. freight yard and shop arrangement to the north of the tracks between Bathurst and John Sts. will require rearrangement, the plans for which have not yet been drawn. To the immediate north of the tracks between Spadina Ave. and York St. the new scheme calls for an elevated passenger car yard for the G.T.R., consisting of 12 tracks, approached by a ladder track from each end. From Bathurst St., along the south side of the viaduct, there will be a surface track leading to the old Northern Ry. docks and the different industries located along the harbor front.



Plan of Viaduct Scheme from C.P.R. Diamond Crossing to Spadina Avenue. (Section 1.)

Under the existing arrangement, the Spadina Ave. bridge, which is 700 ft. long, only crosses the yard tracks to the north of the through tracks, which, as in the new scheme, pass along the south side of the yards. The ascending grade of the viaduct will necessitate the raising of this bridge 5 ft., and it will be extended to span the full width of the tracks, eliminating the steep ramp from the south side of the bridge to the grade over the through tracks. This new arrangement will call for a complete change at this point, as the old arrangement of crossing the tracks at grade was necessitated by the slip at the foot of the street coming right up to the tracks, making impossible an overhead bridge approach at that end under existing conditions. The new bridge will be about 770 ft. long, leading off from the higher ground to the north at practically the same level, and descending on the south on a light ramp, filling in the slip of the city wharf to the south. This extended roadway will connect with the Lake St. extension, which the city proposes to put through in conjunction with the scheme. The John St. bridge will not require to be extended, but as the viaduct level is to be 11 ft. above the present level at that point, the bridge will be raised that distance, the approaches from the south connecting to the Lake St. extension.



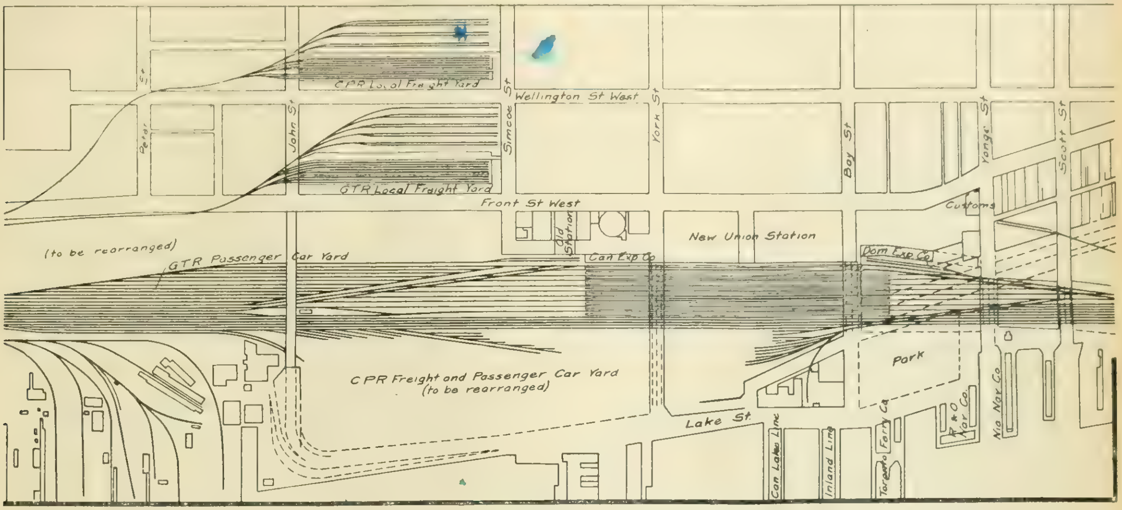
Plan of Viaduct Scheme from Between Scott and Church Streets to Don Freight Yards. (Section 3.)

At John St., between the through tracks and the G.T.R. passenger car yard, the station tracks will lead off in a double ladder, the plans calling for 10 passenger and 2 freight tracks through the station. At John St. also the leads to the C.P.R. freight and passenger car yards will branch off to the south. This yard will be on the same level as the viaduct. The plans for the elevation and rearrangement are not yet outlined, but can be cared for apart from the general scheme. Various considerations entered into the reasons for elevating this yard. In the first place, such an arrangement is undoubtedly more convenient for making up the trains, with no ramps to negotiate, but the principal reason lay in the disposing of York St., which will be carried under the tracks in a long subway. Under this scheme, all the tracks at York St. will be carried over the street. Were the yards on the level, all the tracks leading into the yard from the east would be crossed at grade, reducing the effectiveness of the whole grade crossing elimination project. The shunting of cars in the making up of trains would be a constant source of danger, and from the railway standpoint, the yard accommodation would be materially reduced by the breaking up of trains at the crossing.

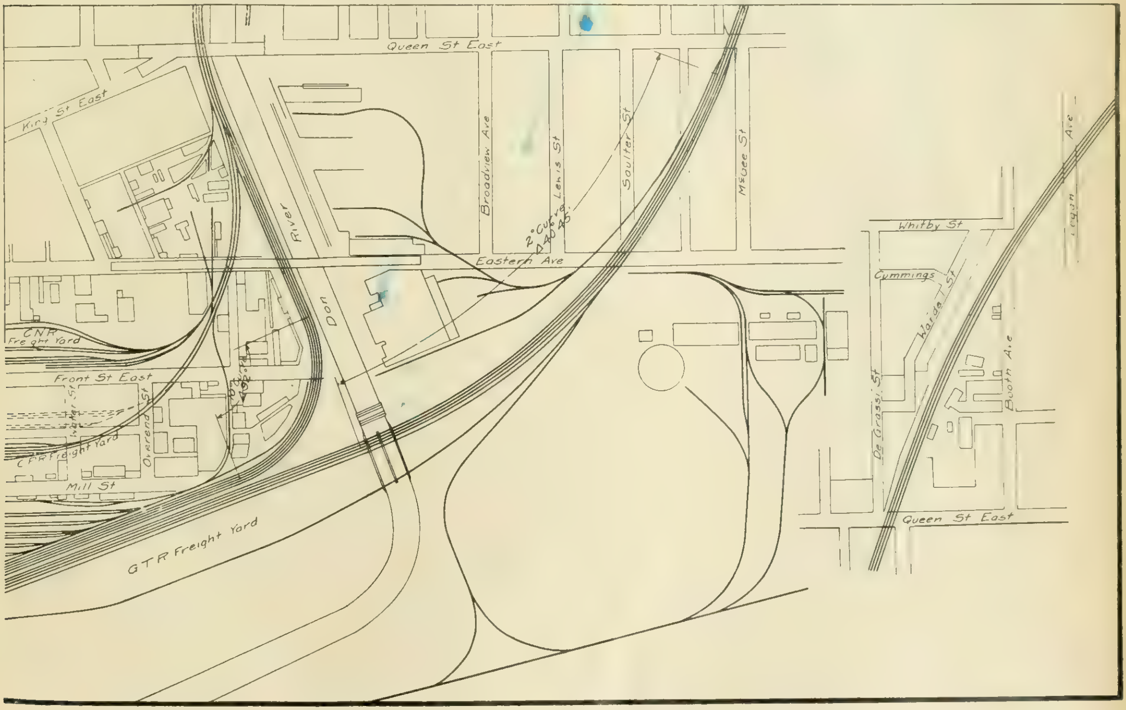
The double ladder leading into the station will be approached from the through tracks by crossovers to the west of the ladder approach. To the south of the station there will be 4 through tracks. The Canadian Express Co.'s present building on the north side of the station tracks at the foot of York St. will be approached by a ramp along the north side of the G.T.R. passenger car yard, requiring a concrete retaining wall along that side, as the building is on the ground level.

Bay St. will be carried under the easterly end of the station tracks and the through tracks, in a subway, the tracks for the C.P.R. freight and passenger car yards branching off on the viaduct at this point.

From Bay St., the station tracks will converge through double ladders to the northerly of the through tracks at Church St., east of which there will be crossovers. The only portion of the entire viaduct to be built



Plan of Viaduct Scheme from Spadina Avenue to Between Scott and Church Streets. (Section 2.)



Plan of Viaduct Scheme from Don Freight Yards to Eastern Ends. (Section 4.)

with concrete retaining walls will be between Yonge and Scott Sts., the balance will all be earth embankments. From the station east there are to be 6 through tracks, crossing all the streets on viaducts

It is from the station easterly that the new viaduct plans differ from those originally ordered, the line instead of following the general trend of the Esplanade, striking across the wharves to where the old lines looped south at Cherry St. The right of way secured across these water lots is 230 ft. wide, as compared to 200 ft. of the present right of way. Through this new right of way there will be 6 tracks, with an embankment width at the top of 85 ft. The property damages under normal conditions to expropriate this property would be enormous, as practically the whole wharf frontage will be rendered useless. But this seemingly wanton destruction of property works in admirably with the harbor improvement scheme of the Toronto Harbor Commissioners. It is proposed to fill in the slips, and extend the bulkhead line considerably further out into the harbor, this arrangement making possible a better wharfage arrangement.

From Parliament St., the line will follow a 1 degree curve through an angle of 21 degrees, again following a tangent to the Don River. At Cherry St. the old G.T.R. right of way will be again struck, the through tracks following the south side of the former right of way, as the new arrangements provide for a new Don exit for the C.P.R. line. In the existing arrangement, the G.T.R. and C.P.R. diverge at Berkeley St., the G.T.R. sweeping southerly to the Don River, and the C.P.R. following approximately a straight line through to the northerly turn at the Don River. In the new arrangement, the two lines will continue together to near the Don, the C.P.R. branching north along the west bank at that point. As mentioned, the right of way between Cherry St. and the Don will be slightly south of the present one, as the C.P.R. has its own line from Cherry St. east, there being crossovers from the common line just west of Cherry St.

To the south of the parallel sets of tracks will be the G.T.R. Don freight yard, from which the additional width for the right of way will be taken. It is proposed to rearrange this yard, but plans have not yet been prepared.

The 2 track C.P.R. line will sweep to the north on a 10 degree curve through 92 degrees, along the west side of the Don, following the right of way of the old G.T.R. Belt Line to its former right of way just south of Queen St. The line will commence to descend at Cherry St. on a 0.44% grade, easing to 0.09% around the curve, increasing to 0.45% to the former grade at Queen St. Queen St. is at present carried over the tracks on a bridge, and at Eastern Ave the plans call for an overhead bridge, probably of the same type as that at Queen St., bridging the river, through tracks, and freight yard approach tracks to the west.

The 5 G.T.R. tracks will continue across the Don River, south of the former right of way, crossing the river on a 120 ft. double girder, slab floor bridge, carrying 18 tracks, to accommodate the freight yard approach tracks as well as the through line. From the Don bridge, the line will swing to the north as far as Queen St. through a 40¾ degree angle on a 2 degree curve, thence on a short tangent to a reverse curve. From the Don, the line will ascend on a 0.4% grade to Queen St., from which point it will be level to Logan Ave., where it will again reach its former grade. Both Eastern Ave. and Queen St. will be carried under the tracks, the street level at Queen St. being slightly depressed. From Queen St. north the line will have only 4 tracks.

The two companies at present have most of their team freight tracks along the Esplanade. Under the new scheme this team track accommodation will remain about the same as at present, the abandoned through tracks being retained for this purpose. The Board of Railway Commissioners' original order expressly prohibited all grade crossings west of Church St., and in consequence the old tracks have been stopped off at that street. Entrances to the two fruit markets at Yonge St., one on the north side and the other on the wharf to the south, are to be made over trestle approaches from the viaduct. The trackage along the Esplanade east of Church St. is to be rearranged, and while the Yonge St. to Church St. portion is being removed, this rearrangement will make a trackage equal to that at present provided there. This arrangement of trackage will also provide access to all the industrial sidings along the old line. The approach to the viaduct will be over the old G.T.R. right of way, up a ramp that reaches the C.P.R. separate tracks where they diverge at Cherry St. All the tracks in this district will cross the streets at grade, with the exception of Trinity St., on the ramp approach, which will be carried under the tracks. With the exception of the approach tracks, all the tracks along the Esplanade will be stopped off at Parliament St., and in order that the grade crossing feature may not present its objectionable feature, the Board's original order provided that on all surface tracks there should be no movement of cars except during specified hours at night, or, if the freight be perishable, when the train was preceded by a brakeman on foot. This Esplanade team track arrangement will have decided advantages over the accommodation provided in the last plans drawn up. In that there were three tracks at grade on each side of a concrete retaining wall viaduct to serve as team tracks and approaches to the present industrial sidings. The closeness of the surface tracks to the mouth of the subways would make them a menace to the public crossing.

From the C.P.R. line at Queen St. there will remain the present C.P.R. entrance, which will be used solely for entering the C.P.R. and Canadian Northern Ontario Ry. east end freight sheds. To serve industries located along the present line between the freight sheds and the Esplanade, there will be a single track line crossing the intervening streets. It will thus be seen that except for a little shunting of cars there will be no train movement on the level.

Most of the street crossings will be by subways. As mentioned, Bathurst St., Spadina Ave., Eastern Ave. and Queen St. will pass over the tracks on bridges. Yonge and Bay Sts. will have 80 ft. subways; York, Scott, Church, Jarvis, George, Frederick, Sherbourne, Princess, Parliament and Cherry Sts., 66 ft. subways, and Trinity St., two 30 ft. subways. The design of the subways has not been completed, but they will likely be of steel, with concrete abutments, facings and deck.

An estimate of the work places the quantity of earth filling for the viaduct at about 3,500,000 yds., and the total cost of the completed project, including the union station, at about $14,000,000. The plans for the new station are in course of preparation, but nothing definite has been decided in this connection pending the formation of the new terminal company.

The viaduct plans have been prepared under the direction of H. R. Safford, Chief Engineer, G.T.R., and J. M. R. Fairbairn, Assistant Chief Engineer, C.P.R. Eastern Lines, by J. R. W. Ambrose, M. Can. Soc. C.E., who was in charge of the G.T.R. grade separation work through the southwest portion of Toronto, and who has been appointed Engineer of Grade Separation for the two companies. We are indebted to Mr. Ambrose for the data on which this article is based, and to Messrs. Fairbairn and Safford for authority to secure the same and for copies of the plans.

The Passing of Sir William Van Horne's Old Office.

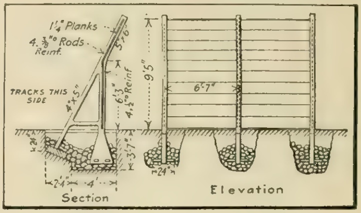
The old room at the Canadian Pacific offices in Montreal, in which Sir William Van Horne as, successively, General Manager, Vice President and President, sat and pored over the map of Canada and drew his plans, and thought out great undertakings, is being knocked out of all rememberable shape of its former self to correspond with the great scheme of reconstruction.

In this room Sir William used to receive his visitors, varied as to importance and distinction. The great ones of the earth have foregathered in the old room which has almost an historic significance. Men like Sir Henry Irving, Matthew Arnold, Lord Alverstone (as Sir Richard Webster), Lord Iveagh, Prince Arthur, His Royal Highness the Duke of Connaught and many others belonging to the old world aristocracies and Illuminati, have chatted in the old room where Sir William, getting down the maps before him, used to evolve his policies of extension and consolidation — when he had time to think of more general things than the paying of the wages—in the early days.

Some of the older officials, who remember the room so well, and the many times they have appeared before the President to discuss large things with him, as well as to enjoy his epigrams (when he had a moment to spare for them), feel a little sentimental regret that its glory has departed.—From the daily press.

Reinforced Concrete Snow Fences.

Snow fences for the Italian State Railways have been built of reinforced concrete along the Termoli-Campobasso line on the east coast of the peninsula. This branch is in mountainous country subject to heavy and continuous snow fall, which fills up the cuts beyond the power of the equipment to remove. About five years ago a start was made toward the construction of snow fences along the most unprotected sections of the line, following the design shown in the accompanying illustration. Since then the whole line has been so protected, with great success.



The fence comprises reinforced concrete standards spaced 6 ft. 7 in. c. to c., with an intervening fence made up of 3 in. pine plank, fitting into grooves in the standards. Each standard is of the size and slope shown and is founded on rock ballast filled into a pit dug for the purpose. The reinforcement of the posts is made up of four round rods tied together with ⅛ in. wire.

The fence is designed to resist safely a uniform horizontal thrust of 20 lb. per sq. ft., or a concentrated, horizontal thrust of 660 lbs. at the top of each section of the fence.

Tank Locomotives of the 2 : 12 : 2 Class have been built for the Java State Railways, and are said to be more satisfactory than Mallet duplex ones of the 2 : 6 : 6 : 0 class, being less liable to slip on account of the large number of wheels coupled into one group. The locomotives can operate on curves of 460- and 500-ft. radius, the track guage (3½ ft.), being widened a little over 9-16 in. for the former and ¾ in. for the latter. The original trial order was followed by an order for a considerable number. The design was at first for a 2 : 12 : 0 class, but the trailing axle was added in order to allow of increasing the capacity of the coal bunker behind the cab. The length of driving wheelbase is 20½ ft., and special provision is made for lateral movement of the axles on curves. On the sharpest curves this movement may be as much as 1 3-32 ins. for the first driving axle, and 3⅞ to 2⅛ ins. for the truck axles, the latter having radial axle boxes. All the wheels have flanged tires, but the flanges are smaller than usual on the two middle driving axles.

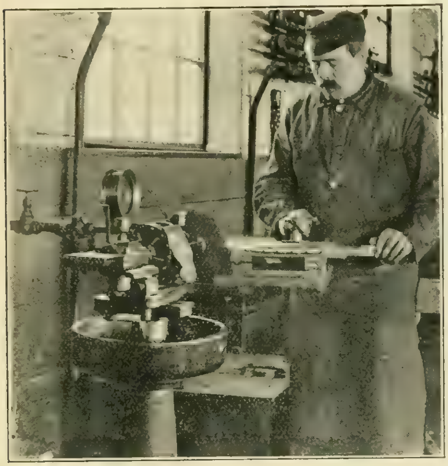
Railway Mechanical Methods and Devices.

Air Motor Grinder at Grand Trunk Railway Toronto Shops.

The G.T.R. Toronto shops are used almost exclusively for the manufacture and repair of track parts, such as frogs, switches and points. In the working of these parts, the saw forms a very important piece of equipment, and requires special means of sharpening to keep in condition. The machine shown in the accompanying illustration is used in these shops for saw sharpening, and is located alongside of the horizontal miller which is used for sawing the rail parts.

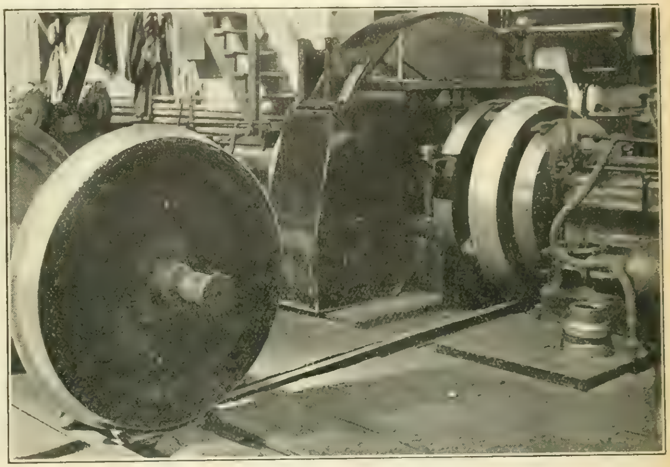
The power end of the grinder consists of a small air turbine, mounted on a bell topped grinder stand, with the shaft of the motor carried in bearings on either side of the motor casing, the bearings being an integral part of the grinder frame. A valve in the air pipe to the rear regulates the air, and varying speeds may be obtained by changing the applied pressure, as recorded on the gauge shown.

The jig for sharpening the saw is attached to an arm projecting from the grinder frame alongside one of the grinding wheels. The jig consists of a flat table, level with the centre line of the shaft, this table having ribs on its under side fitting into the frame of the jig, guiding the table in a path which may be either across the face of the grinding wheel or at a slight angle to it, the position of the jigframe being adjustable. The saw to be sharpened is attached to the face of the table by a clamp, and adjusted to sharpen each tooth of the saw. E. Logan is General Foreman of these shops.


Air Motor Grinder for Sharpening Rail Saws.

Mounting Wheels in Lathe at Canadian Pacific Railway West Toronto Shops.

In the C.P.R. passenger car shops at West Toronto the passenger car wheel lathe is fitted with an attachment for quickly mounting the wheels in the lathe for turning. In front of the lathe there is a narrow gauge track, served by a small car fitted for carrying the pairs of mounted wheels, the wheels being run on the car from the storage tracks nearby. Running into the lathe, there is a standard gauge on which the wheels are run from the small service track car as shown in the accompanying illustration. These two rails of the standard gauge track are secured at the service track end, the other ends being attached to the upper end of air cylinder pistons, the cylinders being bedded under the lathe. The wheels to be turned are run into position in the lathe on the tracks, and by means of the air cylinders, the inner ends of the rails are raised, lifting the wheels in line with the lathe centres, which are then run into position. The rails are then lowered to normal position. This attachment makes possible a quick mounting of the wheels in the lathe.


Attachment for Mounting Wheels in a Wheel Lathe.

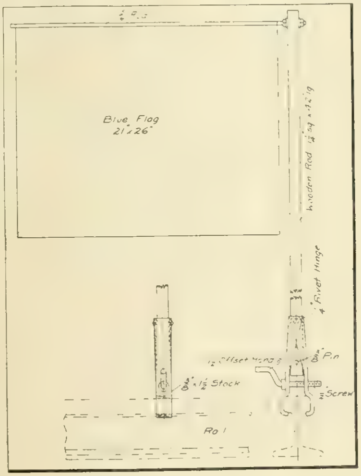
Vanadium steel castings differ in composition from ordinary steel castings only by the presence of from 0.16% to 0.25% of vanadium.

Blue Flag Stand at Canadian Northern Railway Winnipeg Shops.

In view of the widespread interest that has lately been fostered in the safety first movement, any little devices that will promote this movement are in demand. The use of the blue flag in repair yards, for protecting the ends of standing cars while undergoing repairs, is general on all lines in Canada and the U.S., and has proved most efficacious in preventing yard locomotives and shunting trains from bumping the ends of cars that are undergoing repairs, or under which workmen may for the time being be working. This has reduced one of the most prolific causes of accident.

The difficulty in the use of the blue flag has been in the careless manner in which workmen whom the blue flag is to protect, place it at the end of the car or string of cars that are being worked on. It not infrequently happens that the flag is placed in the rung of the car ladder, where a breeze, or a workman climbing to the top of the car, might quite easily knock it to the ground, where it would in all probability not be seen by an approaching train or locomotive. Again, it is often stuck in the ground at the end of the car, where it is easily knocked over with a like result. Numerous accidents have occurred from this very cause. When repair car accidents occur, and an enquiry is being conducted to ascertain the cause, cases have been known where the train crew of the offending train have deliberately knocked down the flag after the accident in order to make a false claim that the flag was down as the train approached, and that in consequence, they were not responsible for the accident.

Realizing all these difficulties, A. McCowan, General Car Foreman, Canadian Northern Ry. Shops, Winnipeg, devised the flag stand shown in the accompanying illustration. The base of the stand consists of a couple of pieces of ⅜ by 1½ in. bar stock, formed to fit the head of the rail at the lower ends, and drawn out and curved at the tops to fit around the end of a 1¼ in. wooden rod, the two pieces being hinged together with ¼ in. rivets as shown. Connecting the two hinged arms, there is a ½



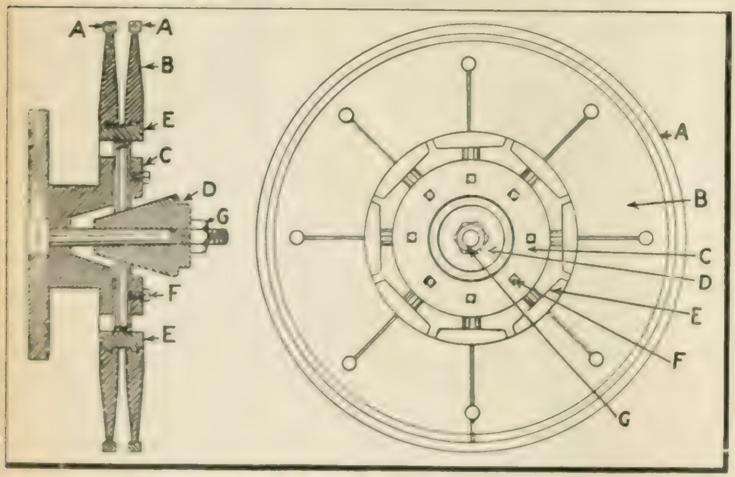
Simple and Secure Blue Flag Stand.

in. screw, one arm having a clearance hole, [illegible] ins. long, with pin in the lower end to keep from drawing out of the clamp, carries on the upper end, a 5-16 in. rod, to which is at- [illegible]

The clamp is attached to the rail at the [illegible] see that the flag pole is placed in position [illegible]

Device for Turning Piston Rings.

The accompanying illustration shows a turning device for locomotive piston rings. [illegible] piston rings may be turned at the same time. The letters marked on the drawing refer to the various parts of the device and rings. A A are the piston rings in [illegible] ring which is interchangeable with other rings of larger or smaller diameters, accord- [illegible]



Device for Turning Piston Rings.

[illegible]

[illegible]

Tire Mounting Shed at Canadian Pacific Railway West Toronto Shops.

The C.P.R. passenger car shop at West Toronto has recently installed a plant for mounting passenger car wheels, to the design of H. R. Naylor, General Foreman, the details of which are shown in the accompanying illustration. The plant is installed in a small frame building outside the pas-

Tire Heating and Mounting Shed [illegible]

[illegible] wheel repairs are made, combining conveni- [illegible]

The frame building [illegible] two bays, that on the left for storage, and that on the right for the tire mounting operations. The tire mounting bay con- [illegible] come from the back of the shed to about a third of the shop depth from the front. Just in front of the near end of the raised rails there is a vertical air cylinder, buried in the ground, used to raise the mounted wheels. In the channel sides of the near end of the raised rails there are slotted bars, free to move about 6 ins., which, when the wheels are raised on the air jack, can be pulled out, and the axle lowered thereon. The T head of the rail ends is cut away so that the upper surface of the end pieces is flush with the rail top, the axles as lowered on the projecting ends being run along the raised rails.

Forming a U loop from the rear of the shed over top of the standard gauge rails and looping around the near end, there is a rail suspended from the roof, on which a small trolley operates. At the rear of the shop, to the left of the raised rail, there is a tire heating furnace of a type recently described in these columns, the tires being mounted in a pile and encircled by a sheet of metal, an oil flame being directed down through the centre of the pile, thereby heating them in batches of about 6. From this pile of heated tires the tires can be lifted on the overhead trolley, and transported to the awaiting wheel centre for mounting. The whole layout of the plant makes for convenience and speed in operation.

Diesel Electric Motor Cars on Swedish State Railway.

Diesel electric motor cars have been in operation on the Swedish State Railways for about a year past. Two such cars were built. The power equipment of each car is a 75 h.p. Diesel engine running at 700 r.p.m., driving a direct-current dynamo of 50 k.w., producing 440-volt current. Two 30 h.p. motors are connected to the main or driving axles, although a third axle is fitted under the machinery compartment, which is at the extreme end of the car. The Diesel engine is a four stroke machine with six cylinders and eight compressor cylinders. Besides driving its own fuel pumps, etc., the engine also drives a small compressor for the air brakes. The engine is started with compressed air stored in steel containers. The engine exhaust goes through a muffler under the car and then to an exhaust pipe over the roof. The cooling water is taken from a tank on the ceiling of the baggage room (just behind the engine compartment) and after going through the engine is carried through a copper radiator on the roof, being circulated by a small pump geared to the engine. Two oil tanks in the engine room provide fuel capacity for about 800 miles of run with two trailers. The fuel consumption is stated to be about 0.8 lb. of oil per mile for the motor car alone and about 1.2 lb. per mile for the motor car with 30 ton trailer, at an average speed of 20 to 30 miles an hour. The car is geared for a maximum speed of 40 miles an hour, and as to tractive power is designed for two 30 ton trailers, the motor car itself weighing 26 tons. Current for illumination is supplied by a 28 cell accumulator under the car, which also furnishes current for a small motor used for [illegible] the governor of the Diesel engine for different speeds of car. Heating in cold weather is done by passing the circulation water of the engine through radiators in the car. These cars are said to be giving satisfactory service. They were built in 1911, and were put into service in the summer of 1912.

It is said that [illegible] fired locomotives operate with only from one third to one tenth the amount of smoke produced by hand fired locomotives.

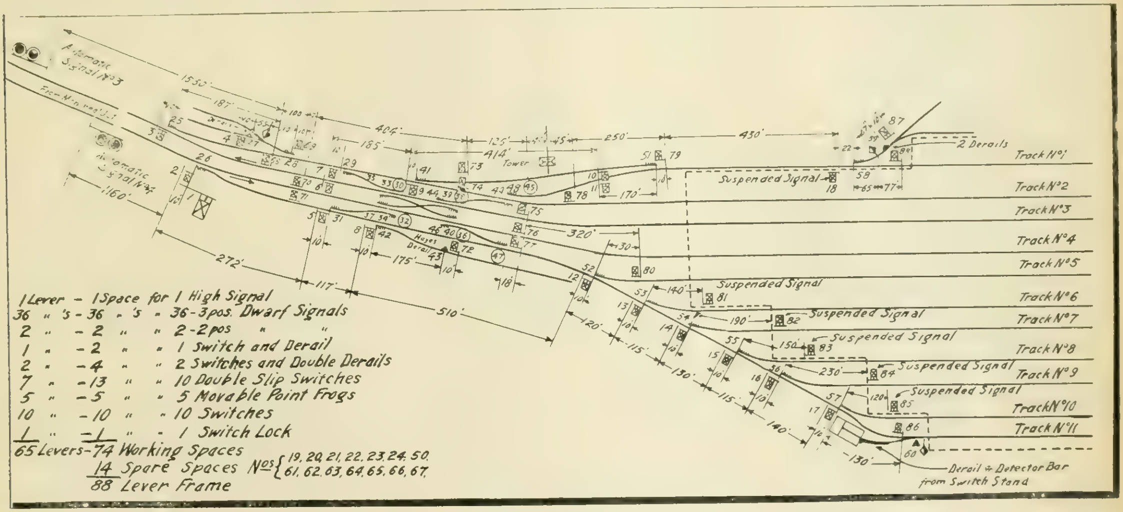
Power Interlocking and Signalling at Windsor Street Station, Montreal, Canadian Pacific Railway.

As the extension to the C.P.R. terminal at Windsor St., Montreal, is nearing completion, a question of general interest to railway men, and one of great importance in the efficient operation of the terminal, is that of the scheme of signalling employed. As in all similar cases, owing to the extent of track area to be controlled, and to the necessity for quick and safe handling of traffic, power interlocking was decided upon. The accompanying plan shows the terminal tracks as signalled by C. W. Parker, Signal Engineer, C.P.R., under whose specification and supervision the work is being executed.

The interlocking cabin, which is located on the north side of the plant, about 400 ft. beyond the train shed, was built by the railway company, and is a three story brick structure of 30 by 18 ft. floor area. Owing to its being located on the side of the track elevation, opportunity is given for the three stories without having it unduly high, and without the cost of excessive excavation. The basement is used for the power apparatus, storage batteries and a small repair shop; the middle floor, which is on the track level, for relay room and office, and the top floor for the operating room, making a very satisfactory arrangement.

As will be seen by reference to the track plan entrance to the terminus is on one inbound main track up to signal 1, at which point, by means of signals 1 and 2 and their consequent signals, selection is made to any of the 11 station tracks.

The signals on the plant are all three position upper quadrant, non automatic, except nos. 68 and 69, which are controlled jointly with the advance signal 3, and are slotted through the intervening track, and signals 70 and 71, which are two position, operating from horizontal to 45° only. With the exception of signal 1, which controls a relatively high speed inbound movement, all movements on the plant are treated as slow speed and are controlled by dwarf signals. This method, not only affords all necessary protection, but does away with expensive overhead bridge construction, and allows, by keeping within the equipment clearance lines, the placing of the signal close to the switch controlled. The signals located in the train shed are of the suspended type, and are fixed to the steel arch directly above the track governed.


Automatic Signal No 3
Automatic Signal No 4
Tower
Hayes Derail
Suspended Signal
2 Derails
Track No 1
Track No 2
Track No 3
Track No 4
Track No 5
Track No 6
Track No 7
Track No 8
Track No 9
Track No 10
Track No 11
Derail & Detector Bar from Switch Stand
1 Lever - 1 Space for 1 High Signal
36 " 's - 36 " 's - 36-3 pos. Dwarf Signals
2 " - 2 " " 2-2 pos " "
1 " - 2 " " 1 Switch and Derail
2 " - 4 " " 2 Switches and Double Derails
7 " - 13 " " 10 Double Slip Switches
5 " - 5 " " 5 Movable Point Frogs
10 " - 10 " " 10 Switches
1 " - 1 " " 1 Switch Lock
65 Levers - 74 Working Spaces
14 Spare Spaces Nos { 19, 20, 21, 22, 23, 24, 50, 61, 62, 63, 64, 65, 66, 67,
88 Lever Frame

Plan of Signalling Installation, Windsor Street Station and Yard, Canadian Pacific Ry., Montreal. Not to Scale.

Each of the station tracks within the train shed is divided into two track sections, and the third or 90° position of the entering signal is secured only when the entire track is unoccupied. In other words, if a train is standing in the farthest section of a station track the entering signal for that track will let a train in only on 45°, or caution, indication. The remainder of the plant is divided up into a number of independent track sections, so arranged as to secure the necessary detector locking, viz., the prevention of operation of any switch within a definite track section when same is occupied by a train. It is used to replace the familiar mechanical method of detector bars, as it is more positive in its operation, gives uninterrupted protection over any predetermined length of track, and affords a means of indicating the exact position of any train within the interlocking limits.

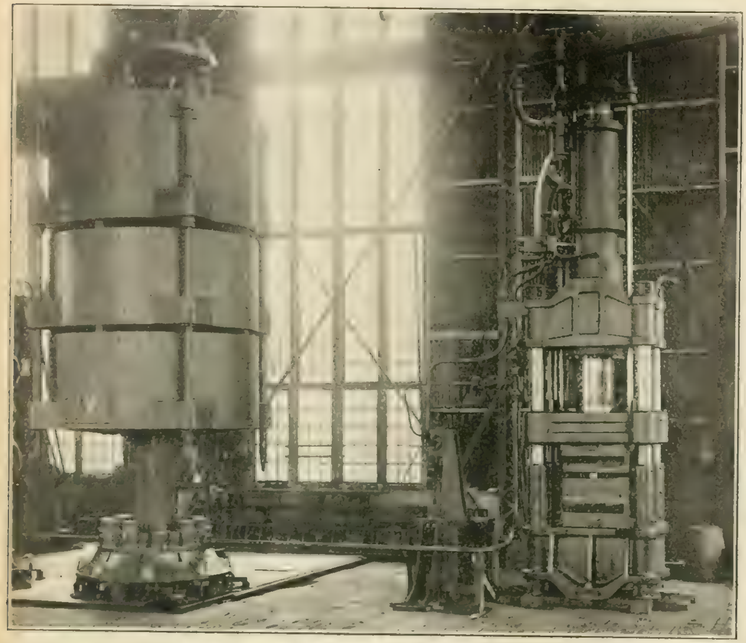
Each track section has a 4 ohm relay, either carried directly into the interlocking cabin, if the distance is not over approximately 500 ft., or repeated into the cabin by means of an indicating relay. All the levers in the interlocking machine controlling the switches are equipped with electric locks, which must be energized before movement of the switch can be made in either direction. Now by energizing all the locks on the switch levers of a given section through the track relay, or its repeater, for that section, it is readily seen that when a track is occupied by a train its relay is deenergized, and therefore the energizing circuit on the switch lever locks is cut off, thus locking all the levers for that section. This is detector locking.

Again, if current is supplied through the energized contacts of these track relays, or their repeaters, to independent lamps, an indication is given of the occupancy of any track section, if the lamp is burning the track is unoccupied. This is what is done in the illuminated track diagram. This device is a metallic case about 12 ft. by 3 ft. high, placed behind and above the interlocking machine in plain view of the operator. The front of this case is opaque, except in a broad outline of the actual track arrangement. Small electric lamps are assembled in reflectors and mounted inside in sets, corresponding each to its track section on the ground. When the whole diagram is lighted the clear outline of the tracks is visible and when a train enters the interlocking limits the diagram becomes dark, corresponding to the section occupied. By this diagram the operator is able to set up for movements with the least loss of time, since, when the signal governing the route has been put normal, releasing the mechanical locking between levers, he may change his switches as soon as they light up again behind a train.

The track sections, relays, repeating indicators and lever locks are all energized from two sets of six cells of storage battery of 120-A.H. capacity, one set feeding relays and locks and the other the track circuits. In supplying the track the continuous track loop is used, which means that both the positive and negative sides of battery are led out over the entire plant to the feeding points and back to its own side again. This is done to afford additional safeguard against interruption by broken track circuit, since, should a break occur between battery and a given track circuit, there is always a second path for the current round the other side of the loop. Taps, of course, are taken off both positive and negative loops at each feeding point. Variable resistances are placed in these track taps to allow for the necessary track voltage adjustment.

The interlocking machine, which is installed in the upper floor of the cabin is the all electric unit lever type made by the General Railway Signal Co. and has a capacity of 74 working levers, and 14 spare spaces. As above mentioned, all the switch levers are equipped with locks. The interlocking machine in an all electric system is merely a series of switches mechanically interlocked and controlled by the necessary indications and safety magnets.

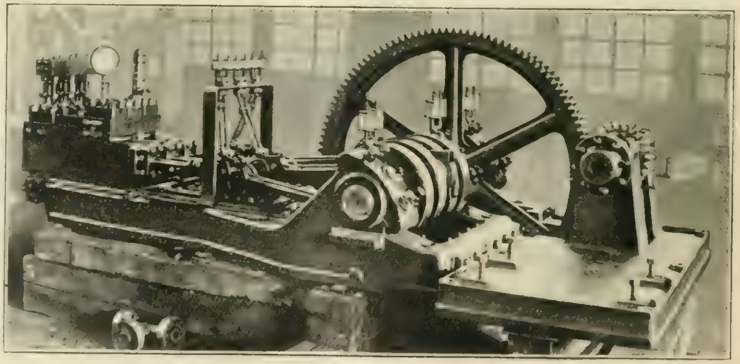
Battery is supplied on buss bars on the machine from storage battery at 110 volts, and is led through the lever controllers or switches to the functions to be operated by rubber covered insulated wire, each signal blade and pair of switch points being operated independently by a motor through a suitable gear.



500 Ton Hydraulic Forging Press with Accumulator.

In an electric interlocking system, inasmuch as there is no manual force needed to operate the various functions, nor any rigid connection between the lever and the part operated, as in mechanical interlocking, it is necessary to make special provision that the function moves in accordance with its lever, and also that a switch must have completed its movement and been locked before the controlling lever can complete its stroke and, therefore, release the locking between levers. The first of these essentials is secured by a reversible switch or pole changer located out at the switch and operated by the switch movement, so that the normal or reverse control contacts must be in agreement with the normal or reverse contacts on its controlling lever. The last is obtained by means of the indication current and magnet.

When a switch motor finishes its stroke and the locking plunger is through the lock rod, the operating current is cut off and the motor continues to run a few revolutions, due to its own momentum, and acts as a generator. The current thus generated returns to the interlocking machine over the indication wire and energizing the indication magnet, releases the lever and allows the stroke to be completed. The indication current comes from the function being operated and only after it has finished its stroke and is locked. In the case of a signal an indication is given only when it returns to the normal or position of greatest protection.



Three Plunger Motor Driven Hydraulic Forging Press Pump.

In order to prevent the operation of a signal or switch from any incorrect source, due to crosses in the wires between the interlocking machine and function, cross protection is provided by means of polarized relays mounted on a terminal board below each lever and also by the circuit breaker on the operating switchboard. These relays are so connected that the operating current from the proper source tends to hold the contacts closed, and current from any improper source opens the contacts and releases the circuit breaker on the operating switchboard, cutting off all operating current from the buss bars, until the cross has been removed.

The switch mechanisms used are the General Railway Signal Co.'s model 4, and the signal mechanisms are all the model 2A motor type. Power for the operation of the interlocking plant is furnished from 57 cells of storage battery of 120-A.H. capacity.

It is proposed to instal a system of intercommunication between the operating room in the interlocking cabin and each station platform.

Power is supplied from the city circuit at 220 volt, 60 cycle, 3 phase, and is transformed to 12 volts for lighting the track diagram and signals. The signals are all equipped with 5 watt tungsten lamps. The commercial current is also used for driving the motor generator sets for charging the storage battery.

The charging switches are mounted on a panel in the power room, with the necessary voltmeters and ammeters, and so arranged to permit flexibility in the charge and discharge of the two low voltage sets. The high voltage battery can be charged, of course, without interruption to the operation of the interlocking plant. In case of failure of the commercial current the signals can be lighted from the 12 volt lock battery.

The wires are run to all the functions in wood trunking above the surface of the ground, and are enclosed in conduit inside the train shed. Insulated copper wire is used throughout.

The contract is being carried out by the General Railway Signal Co. of Canada, Ltd., Lachine, Que., of which V. I. Smart is Vice President and General Manager, and R. G. Gage is Chief Engineer.

Hydraulic Forging Press in the Canada Forge Company's Plant.

In the Canada Forge Co.'s plant at Welland, Ont., there is a hydraulic forging press of a design that is unique in this country, and which is shown in one of the accompanying illustrations. It is of German design, built on the Astfalck system by the Wm. Tod Co., Youngstown, O. The unique feature of the press is the size of the work that can be handled, and the speed with which it operates.

The press is of 500 ton capacity, and has a 30 in. plunger that operates at from 80 to 120 strokes a minute on billets up to 32 ins. diameter, the supplied hydraulic pressure being 3,000 lbs. It is of the one lever type, that is to say one lever movement controls the movements of the plunger. The tremendous pressures handled make necessary the design of all the parts particularly strong. The valve design is interesting from the fact that both wearing parts of the valve are made of hardened steel, as the effect of the high pressure water passing over the mating surfaces causes the latter to become badly scored. The accumulator for maintaining a uniform supply of high pressure water is shown adjoining the press. It is of the pick up weight design, of a steel construction throughout. The pick up device is capable of quick adjustment, and enables the press to be operated at various pressures as required by the work.

The pump shown herewith is of the horizontal three plunger type, driven by a 110 h.p. direct connected electric motor mounted on the base attached to the pump base.

The cylinder portion of the pump is novel, consisting of a solid steel forging, in which the three cylinder bores, as well as all the valve seats, have been machined from the solid. It delivers at a 3,000 lb. pressure. The weight of the press is 90,000 lbs., and the installation complete, without the accumulator weighs, 200,000 lbs.

Gas Electric Car on Victoria and Sidney Railway.

Canadian Railway and Marine World for September and November contained some brief particulars of a gas electric car which has been placed in operation on the Victoria and Sidney Ry. on Vancouver Island. This line, of 16.26 miles, runs from Victoria to Sidney, from which point there is a ferry service to the British Columbia mainland. It traverses the Saanich Peninsula, a particularly picturesque and fertile portion of the lower east end of the island, which is becoming closely settled and requires a more frequent service than was possible with steam operation. The car is said to be averaging 110 miles a day, and on two days a week a 30 ton trailer is handled.

The Great Northern Ry. ordered two of these gas electric cars, which are shown in the accompanying illustration. One of them is being operated on the Victoria and Sidney Ry., and the other on a G.N.R. branch line in the State of Washington. They made the journey from Chicago to the Pacific Coast with their own power.

Each car is of the combination passenger, smoking and baggage compartment type. It measures 71 ft. 8 ins. long over bumpers, 10 ft. 5 ins. wide, and is partitioned into four compartments: one 27 ft. 11 ins. long for passengers; a smoking section, 12 ft. 5 ins. long; a baggage room, 10 ft. 11⅞ ins. long; and the engine cab, 11 ft. 11 ins. long, containing the power plant apparatus. The net weight of the car is approximately 51½ tons, and it has a total seating capacity for 86 passengers. A centre vestibule with side entrances runs crosswise between the passenger and smoking compartments. There is also a rear platform entrance leading into the passenger compartment. The smoking section provides for 26, and the passenger compartment for 60 of the total seating capacity. The car is essentially a locomotive and car combined in one unit. The motive power centres in an internal combustion engine, generator and the motors. But one motorman and one conductor are required to operate the car.

All steel construction, except the interior finish, prevails throughout. The frame consists of steel I beams and channels, strongly cross braced, and steel plates form the outside sheathing. The underfloor is of wood, sheathed with sheet iron on the lower side. Between this and the floor proper a heavy felt lining is inserted, and the car sides are also interlined with felt. The interior trim is of mahogany, highly finished, and the ceiling is sheathed with three ply wooden veneer, painted straw yellow with green stenciling and gold striping. The exterior of the body is finished in green. The windows are fitted with plate glass; the seats are made long enough to accommodate three persons, are covered with friezette plush in the passenger compartment and with genuine Spanish leather in the smoking room, and the entire car is lighted with electric incandescent fixtures.

The generating unit is located above the floor line of the cab, free from dust and dirt and under immediate observation of the engineer. It consists of an 8 cylinder, 4 cycle gas engine of the V type, direct connected to a 600 volt, commutating pole electric generator, designed to meet the special conditions the service demands. Flexibility of control and economy of operation are assured through electrical transmission of the power. Starting the engine is effected by compressed air taken from the main reservoirs of the air brake system, which are built with surplus capacity for this purpose. The main air compressor is driven from the crank shaft of the main engine, and is fitted with an automatic governor which maintains a constant pressure. The engine can rotate at normal speed, irrespective of the speed of the car, and deliver its maximum power, a feature of great advantage on grades, in the case of snow storms, or in the event of emergency conditions. An auxiliary equipment is also provided, consisting of a 2 cylinder, 4 cycle gas engine, direct connected to a single cylinder air compressor and lighting generator. The function of this set is to supply an initial charge of air for starting the main engine and to deliver power for lighting the car. This set is started by hand.

The method of control is simple, substantial and similar to that of any standard electric trolley car. The car is equipped with motors of 200 h.p. capacity. Mounted on the axles of the forward truck are two GE 205, 600 volt, box frame, oil lubricated, commutating pole railway motors of 100 h.p. each. By means of a special controller they are placed progressively in series and parallel connection.

Energy is transmitted directly without the intervention of mechanical change speed gearing. The voltage is governed by varying the strength of the generator field, which is accomplished by the movement of a single handle on the controller, and the resultant speed changes of the motors produce a smooth and rapid acceleration without rheostatic power losses or gear changes. Separate handles are provided for throttling the engine and for reversing the car. The latter is accomplished instantly by changing the motor connections in the usual manner, without stopping the engine, which always rotates in the same direction. This allows the car to be brought to a halt quickly, independently of the brakes in an emergency. All the levers are located within convenient reach of the operator. The radiators are placed on the roof and circulation for cooling the engine is maintained by the thermo siphon system.

The controller is also arranged for governing the motors by shunt field control. This auxiliary method of control assures greatly increased operating efficiency through uniform saving of power, economy effected by decrease in the weight of the equipment and an available increase in the service capacity. Two extra points are provided in the controller for final speed acceleration in parallel, whereby the motor fields are shunted and weakened. The resulting higher armature speeds permits the use of smaller pinions, and full utilization of the power input is secured throughout the entire speed range, from start to full speed.

The trucks are of the heavy swing bolster type with elliptic bolster and coil equalizer springs. The bearings, treads and flanges of the wheels and axles conform to M.C.B. standards. The brake equipment includes hand brakes in addition to the combined straight and automatic air brakes. A high power incandescent headlamp and reflector, an air whistle and a pneumatic gong are provided; and a hot water heater, coal fired, is installed for heating the car. To prevent freezing in cold weather when the car is lying idle, the heater circulation may be connected to the engine cooling system. A 150 gallon gasolene supply tank is suspended underneath the car. While the car is running, the gasolene is pumped automatically by the engine; and when first starting, by a hand pump.

Both the cars referred to were built by the General Electric Co. at Schenectady, N. Y. They are of the same type but larger than the gas electric car which has been operated on the Quebec and Lake St. John Ry. during the last two years. The dimensions of the last mentioned car, which will be interesting for comparison, are as follows:—Length, 58½ ft., width, 10 ft. 5 ins. It has the same number of compartments, viz., general passenger, 25½ ft. long; smoking, 10 ft. long; baggage, 6 ft. long, and engine cab, 12 ft. long. The net weight is 39½ tons, and the seating capacity 76 people.

Gas Electric Cars Built for Great Northern Ry., One of Which is Operating on Victoria and Sidney Ry.

Union Stock Yards, St. Boniface, Man.—These yards, which are operated by the Canadian Pacific, Grand Trunk and Grand Trunk Pacific Railways were fully described in Canadian Railway and Marine World for September, when a ground plan of them was given. A photograph was not then available, but has since been secured, and two illustrations made therefrom are given on pages 568 and 569.

Canadian Northern Railway Company's Annual Report.

The following directors' report, over the signature of Sir Wm. Mackenzie, was submitted at the annual meeting on Toronto, Nov. 24.

The results of the company's operations for the fiscal year ended June 30 are as follows:—

GROSS EARNINGS

From passenger traffic	$3,749,498.35
From freight traffic	18,561,026 90
[illegible] sleeping cars, interest and profits from elevators and other subsidiary companies, investments, premiums, etc.	2,216,953.22
	$24,527,478.47
WORKING EXPENSES, (including taxes etc.	17,503,610 57
Net earnings	$7,023,867.90
Deduct fixed charges	5,190,924.12
Surplus	$1,832,943.78
From this deduct interest at 5% per annum paid on income charge convertible debenture stock outstanding	988,214.49
Net surplus for year	$ 844,729.29

The gross earnings show an increase of $3,417,384.84, or 16.38%, and the net earnings of $892,822.79, or 15.18%, over the preceding year. The working expenses were 74.64% of the gross earnings of the railway proper and 72.10%, including taxes, of the gross earnings from all sources, compared with 73.82% and 71.81% respectively last year.

During the year 236 miles of newly constructed tracks were added to the system, the average mileage operated being 4,297 miles.

Land sales during the year were 19,755 acres for $291,193.18, an average of 14.74 an acre, after making certain adjustments in respect to sales in previous years. The actual average price per acre during the current year was $15.36, compared with 55,111 acres for $836,084.37, an average of $15.17 the preceding year. Whilst your directors have not made any special effort to sell its own lands, the policy of colonizing Dominion Government farm lands has been continued, and over two million acres were entered upon by settlers. The effect of this policy is now being seen in the increased movement of agricultural products of all kinds.

Favorable weather having prevailed during the ripening and harvesting period, it is confidently expected that the 1913 crop in the provinces of Manitoba, Saskatchewan and Alberta will exceed that of any previous year in point of quality and abundance of yield. The marketing of grain from the territories served by your railway has commenced considerably earlier than last year, and the quantity of uniformly high grade grain shipped to the lake ports at the date of this report is very much in excess of any previous year at the same date. This early return in cash to the farmer is already being reflected in increased activity in the industrial centres, with corresponding satisfactory [illegible] figures to your company. Recognized authorities conservatively estimate the yield for the three provinces as follows:—Wheat, 220,000,000 bushels; oats, 224,000,000 bushels; barley, 34,000,000 bushels; flax, 15,000,000 bushels.

The earnings derived by your company from this great crop would have been very greatly increased if its transcontinental line was in operation, and your directors have the satisfaction of reporting that excellent progress has been made during the year in its construction and are now able to state that by the close of the present year connection will have been established at Port Arthur with the eastern lines, and that the last link in the chain, namely, the line through the Rocky Mountains will be connected early in 1914. A second transcontinental railway between the industrial east and the fertile west is not only an event of importance to your company but marks an interesting era in the history of Canada. The fact that commerce and business interests between eastern and western provinces continue to grow in satisfactory volume, the assured prospect of increased immigration in the future and the knowledge that the territory through which the new railway is built abounds in valuable natural resources waiting only railway facilities for development, guarantees to your company a very large measure of traffic in the immediate future.

Four per cent. perpetual consolidated debenture stock to the amount of £1,438,356 was sold during the year and five per cent. income charge convertible debenture stock to the amount of £2,057,612 was also sold, the proceeds of both issues being applied to the construction, improvement and equipment of the line.

The Dominion Parliament granted during the year to the C.N. Ontario Ry. and the C. N. Alberta Ry., parts of the C.N.R. system, a cash subsidy of $15,640,000, which with those previously granted have been or will be expended on construction, improvement and equipment. All moneys also received from the sale of land grants or raised by securities have been expended in the same manner. The increase of $7,000,000 in the capital stock represents the amount issued to the Dominion Government under the terms of the subsidy above mentioned.

The following statement shows in concise form the company's growth during the past ten years:—

	1903	1913
Mileage operated	1276	4552
Passenger traffic	$ 389,170 00	$ 3,749,500 00
Freight traffic	1,896,380 00	18,561,026 00
COMMODITIES		
Flour (sacks)	332,096	3,047,478
Grain (bushels)	12,367,110	59,380,957
Live stock (head)	23,775	239,133
Logs of lumber (feet)	85,551,000	448,351,000
Coal (1909) (tons)	326,591	1,111,865
General merchandise (tons)	173,379	1,371,927
EQUIPMENT PURCHASED		
Locomotives	73	534
Sleeping and dining cars	1	76
Passenger cars	22	376
Baggage, mail and express cars	10	135
Freight cars, all kinds	2,507	23,759

Having regard to the mileage operated, the development of traffic, the necessarily heavy and continued expenditures for the betterment of the service in every department, including the purchase of equipment of all kinds, these figures are submitted as testimony of the wisdom shown in the location of your various lines.

The Canadian Northern Ontario Ry. has been connected between Toronto and Ottawa, and a regular service will soon be established between Toronto, Ottawa, Montreal and Quebec. The completion of this section, together with the section connecting with the Western Lines at Port Arthur in a few months, will enable your company to retain a large volume of traffic originating on its lines in the east and west which it is now compelled to hand over to other companies, and it will also open up a large traffic producing territory which, while of first importance to the Canadian Northern Ontario Ry., will be of substantial advantage to the system as a whole.

Your directors are pleased to report very satisfactory progress in the construction of the tunnel through Mount Royal, which is to give the lines of your railway and other allied companies access to the centre of the city of Montreal. When completed—it is hoped concurrently with the inauguration of a transcontinental service between Montreal and Vancouver—your company will enjoy a terminal situation in Montreal second to no other railway company.

The accounts and statistical tables appended were submitted by D. B. Hanna, Third Vice President:—

CONDENSED GENERAL BALANCE SHEET

ASSETS

Cost of railway and equipment		$221,257,996.74
Acquired securities (cost)		8,294,006.87
Advances to other companies		3,344,896.97
Advances to lines under construction		9,590,268.47
Value of material and supplies on hand	$3,286,680.10	
Due from agents, station balances, etc	987,868.19	4,274,548.29
Deferred payments and accrued interest on land sales	7,834,174.42	
Cash with National Trust Co., account of land sales	2,962,310.93	10,796,485.35
Cash Account—		
With Dominion Government	836,579.12	
With province of Manitoba	18,830.61	
With province of Saskatchewan	805,218.40	
With province of Alberta	1,142,100.02	
Cash on hand	2,507,029.06	5,309,757.21
		$262,867,959.90

In addition to the above assets, the company owns approximatelo 850,000 acres of land in Manitoba and Saskatchewan.

LIABILITIES

Capital stock		$77,000,000.00
Bonds and stock (guaranteed by government)		54,633,824.53
4% perpetual consolidated debenture stock		46,464,715 83
5% income charge convertible debenture stock		25,000,000.00
Land grant bonds—		
1899	$2,000,000 00	
1909	3,664,113.38	5,664,113.38
Car trust obligations		19,501,500.00
Current liabilities—		
Unpaid pay rolls	1,248,977.91	
Unpaid audited vouchers	2,343,126.18	
Due to other companies	4,355,339.38	7,947,443.47
Coupons and dividend warrants due July 1 (since paid)	1,926,406.72	
Accrued interest on bonds equipment securities	511,988.18	2,438,394.90
Equipment replacement fund		508,748.13
Surplus—		
Surplus: land account	16,930,835.01	
Railway account	6,778,384.65	23,709,219.66
		$262,867,959.90

INCOME ACCOUNT

Operating expenses		$17,327,743.49
Taxes, railway		112,858.65
Taxes on company's land		63,008.43
Interest on bonds, etc.—		
Consolidated debenture bonds guaranteed by Government of Manitoba	$486,237.93	
Ontario division debenture bonds, guaranteed by Government of Manitoba	230,670.26	
Winnipeg terminal bonds, guaranteed by Government of Manitoba	120,000.00	
3% debenture stock, guaranteed by Dominion	280,799.86	
3½% debenture stock, guarteed by Dominion	276,380.51	
4% debenture stock, guaranteed by Government of Manitoba	114,399.96	
4% debenture stock, guaranteed by Government of Saskatchewan	271,783.24	
4% debenture stock, guaranteed by Government of Alberta	127,400.00	
Consolidated debenture stock	1,768,063.77	
Qu'Appelle, Long Lake and Saskatchewan Ry. 4% debenture stock	202,056.02	
Land grant 4% bonds	150,224.25	4,028,015.80
Rental of Leased Lines)—		
Northern Pacific & Manitoba Ry	225,000 00	
Minnesota & Manitoba Rd.	13,960.00	238,960.00
Interest on equipment securities		923,948.32
Accrued interest to June, 1913	511,988.18	
Less accrued interest to June, 1912, paid during current year	459,090.25	52,897.93
Interest at 5% per annum paid on income charge convertible debenture stock outstanding		988,214.49
Balance of income account		6,778,384.65
		$30,514,031.76

Balance of income account, June 30, 1912, as per annual report		$5,986,553 29
Gross earnings, viz.:		
Passenger earnings	$3,749,498.35	
Freight earnings	18,561,026.90	
Express, mail and miscellaneous earnings	1,966,953.22	24,277,478.47
Part of premium received from sale of 5% income charge convertible debenture stock applicable to the first half year's dividend on said stock.		250,000 00
		$30,514,031.76

GROSS EARNINGS

Class	1913	Per cent.
Passenger	$3,749,498.35	15.44
Freight	18,561,026.90	76.45
Mails	132,376.46	00.55
Express	499,794.11	02.06
Miscellaneous	1,334,782.65	05.50
Total	$24,277,478.47	100.

OPERATING EXPENSES

Class	1913	Per cent.
Maintenance of Way and structures	$3,224,929.82	18.42
Maintenance of equipment	3,301,164.83	18.86
Traffic expenses	427,951.40	02.45
Transportation expenses	9,701,203.97	55.42
General expenses	848,360.55	04.85
Total	17,503,610.57	100.

SUMMARY OF EARNINGS AND EXPENSES

Class	1913	Per cent.
Gross earnings	$34,277,478.47	
Operating expenses	17,503,610.57	72.10
Net earnings	6,773,867.90	27.90

DESCRIPTION OF FREIGHT CARRIED

	For year ended June 30	
	1913	1912
Flour, sacks (100 lbs. ea.)	3,047,478	2,854,136
Grain, bushels	59,380,957	53,441,149
Live stock (all kinds) head	239,133	188,669
Logs and lumber, feet	448,351,000	405,395,000
Firewood, cords	233,248	227,030
Coal, tons	1,111,865	804,803
Immigrants' effects, cars	4,628	5,154
Building material (lime, stone, brick, sand, etc.) cars	57,367	53,425
Miscellaneous, tons	1,371,927	1,203,887

PASSENGER TRAFFIC

	1913	1912
Passengers carried (earning revenue)	1,984,978	1,681,760
Passengers carried one mile	157,225,910	158,400,017
Passengers carried one mile per mile of road	36,590	40,741
Average distance carried	79.21	94.18
Total passenger revenue	3,590,313.39	3,349,317.00
Average amount received per passenger	1.80.87	1.99.16
Average amount received per passenger per mile c	.02.284	.02.115
Total passenger train earnings $	4,381,668.92	4,012,475.55
Passenger train earnings per train mile $	1.28.088	1.21.074

FREIGHT TRAFFIC

Revenue tons carried	6,821,811	5,970,449
Revenue tons carried one mile	2,366,393,799	2,024,003,946
Revenue tons carried one mile per mile of road	550,708	520,577
Average distance haul of one ton	346.88	339.00
Total freight revenue	$18,261,130.13	15,337,533.95
Average amount received for each ton of freight $	2.67.687	2.56.891
Average revenue per ton per mile cts.	.00.772	.00.758
Total freight train earnings	$18,561,026.90	15,567,998.17
Freight train earnings per train mile $	2.83.240	2.37.492

PASSENGER AND FREIGHT, ETC

Gross earnings per mile of road $	5,649.87	5,365.25
Operating expenses per mile of road $	4,073.45	3,852 64
Net earnings per mile of road $	1,576.42	1,512.61
Amount required per mile of road to pay fixed charges, including leased lines $	993.01	1,008.17

TRAIN MILEAGE

Mileage of passenger trains	3,420,821	3,314,063
Mileage of freight trains	6,553,100	6,555,157

EXPENSES PER TRAFFIC TRAIN MILE

Maintenance of way and structures cts.	32 33	26.44
Maintenance of equipment cts.	33.10	33.06
Traffic expenses cts.	04.29	03.65
Transportation expenses cts.	97.26	81.19
General expenses cts.	08.51	07.43
Total $	1.75.49	1.51.77

SUMMARY OF EQUIPMENT

	June 30,	
	1913	1912
Locomotives	534	430
Sleeping and dining cars	76	64
Passenger cars	376	307
Baggage and mail and express cars	135	99
Business cars	16	14
Freight, refrigerator and stock cars	23,759	18,675
Conductors' vans	396	257
Boarding, tool, auxiliary cars, steam shovels and snow equipment	701	594

The total mileage owned and operated, including leased lines at June 30 was 4,552.76, located as follows:—Ontario, 356.60; Manitoba, 1,833.75; Saskatchewan, 1,851.56; Alberta, 467.15; Minnesota, 43.70. The average mileage operated during the year was 4,297 miles.

Birthdays of Transportation Men in December.

Many happy returns of the day to:—

E. T. Agate, M. Can. Soc. C.E., District Engineer, Canadian Northern Ontario Ry., Sudbury-Port Arthur Line, Sudbury, born at Pittsford, N.Y., Dec. 7, 1874.

E. Alexander, Assistant Secretary, C.P.R., Montreal, born in Yorkshire, Eng., Dec. 8, 1862.

J. H. Barber, M. Can. Soc. C.E., Engineering Department, C.P.R., Montreal, born at Cobourg, Ont., Dec. 20, 1856.

H. E. Bissell, Right of Way and Claims Agent, Grand Trunk Pacific Ry., Winnipeg, born near Noyan, Que., Dec. 31, 1867.

N. E. Brooks, M. Can. Soc. C.E., Engineer of Maintenance of Way, Western Lines, C.P.R., Winnipeg, born at Sherbrooke, Que., Dec. 25, 1866.

Harold Browning, steamship agent, etc., Windsor, Ont., born at Stamford, Lincolnshire, Eng., Dec. 2, 1864.

T. C. Burpee, M. Can. Soc. C.E., Superintending Engineer, Canadian Government Railways, Moncton, N.B., born at Sheffield, N.B., Dec. 11, 1852.

W. W. Butler, Vice President, Canadian Car and Foundry Co., Montreal, born at Danville, Ohio, Dec. 9, 1862.

M. M. Campbell, Building Inspector, G.T.R., Montreal, born at Bridgeton, N.B., Dec. 17, 1879.

H. Foster Chaffee, Passenger Traffic Manager, Richelieu and Ontario Navigation Co., Montreal, born at Knowlton, Que., Dec. 18, 1868.

A. H. Chave, Purchasing Agent and Assistant to First Vice President, Canadian Car and Foundry Co., Montreal, born at Williamsbridge, N.Y., Dec. 26, 1872.

W. H. Gardiner, City Freight Agent, C.P.R., and District Freight Agent, Esquimalt and Nanaimo Ry., Victoria, B.C., born there Dec. 6, 1859.

H. H. Gildersleeve, Manager, Western Lines, Richelieu and Ontario Navigation Co., Toronto, born at Kingston, Ont., Dec. 15, 1865.

A. S. Goodeve, member Board of Railway Commissioners for Canada, born at Guelph, Ont., Dec. 15, 1860.

A. J. Gorrie, ex-General Superintendent, Canadian Northern Quebec Ry., Quebec, born at Raith, Kirkcaldy, Scotland, Dec. 10, 1868.

R. S. Gossett, Auditor of Disbursements, Canadian Northern Ry., Toronto, born there, Dec. 28, 1879.

W. H. Grant, Manager of Construction, Mackenzie, Mann and Co., Ltd., Toronto, born at Acton, Ont., Dec. 8, 1858.

F. P. Gutelius, M. Can. Soc. C.E., General Manager, Canadian Government Railways, Moncton, N.B., born at Mifflinburg, Pa., Dec. 21, 1864.

D. B. Hanna, Third Vice President, Canadian Northern Ry., Toronto, born at Thornliebank, Scotland, Dec. 20, 1858.

J. J. Hennigar, General Agent, Richelieu and Ontario Navigation Co., Hamilton, Ont., born at Topeka, Kan., Dec. 21, 1884.

E. W. Holton, General Passenger Agent, Northern Navigation Co., Sarnia, Ont., born at Belleville, Ont., Dec. 15, 1872.

S. P. Howard, ex-General Freight Agent, Eastern and Lake Superior Divisions, C.P.R., Montreal, born there, Dec. 30, 1865.

A. J. Isbester, Assistant District Engineer, Port Arthur District, Canadian Northern Ry., Port Arthur, Ont., born at Ottawa, Dec. 18, 1879.

R. Johnson, Night Locomotive Foreman, C.P.R., Sortin Yard, Montreal, born at Quebec, Que., Dec. 24, 1863.

B. B. Kelliher, M. Can. Soc. C.E., Chief Engineer, Grand Trunk Pacific Ry., Winnipeg, born in Ireland, Dec. 26, 1862.

J. T. McGrath, ex-Superintendent of Motive Power and Equipment, Chicago and Alton Rd., Bloomington, Ill., born at Toronto, Dec. 6, 1869.

A. T. McKean, City Freight Agent, C.P.R., Winnipeg, born at St. John, N.B., Dec. 18, 1886.

A. E. Macdonald, General Claims Agent, Canadian Northern Ry., Winnipeg, born at Woolwich, Eng., Dec. 11, 1870.

L. Macdonald, Division Freight Agent, G.T.R., Toronto, born at Montreal, Dec. 10, 1871.

A. D. MacTier, General Manager, Eastern Lines, C.P.R., Montreal, born at Blairgowrie, Scotland, Dec. 27, 1867.

J. Niblock, ex-Superintendent, C.P.R., Victoria, B.C., born in York County, Ont., Dec. 21, 1849.

A. Price, Assistant General Manager, Eastern Lines, C.P.R., Montreal, born at Toronto, Dec. 6, 1861.

G. D. Robinson, Assistant Export and Import Freight Agent, C.P.R., Toronto, born at St. John, N.B., Dec. 7, 1877.

Collingwood Schreiber, C.M.G., Hon. Mem. Can. Soc. C.E., General Consulting Engineer to Dominion Government, Ottawa, Ont., born at Bradwell, Essex, Eng., Dec. 14, 1831.

F. P. Smith, Secretary, Richelieu and Ontario Navigation Co., Montreal, born there, Dec. 23, 1873.

C. E. E. Ussher, Passenger Traffic Manager, C.P.R., Montreal, born at Niagara Falls, Ont., Dec. 29, 1857.

H. H. Vaughan, M. Can. Soc. C.E., Assistant to Vice President, C.P.R., Montreal, born at Forest Hill, Essex, Eng., Dec. 26, 1868.

R. C. Vaughan, Assistant to Third Vice President, Canadian Northern Ry., Toronto, born there, Dec. 1, 1883.

A. P. Walker, M. Can. Soc. C.E., Division Surveyor, Ontario Division, Toronto, born at West Hartlepool, Eng., Dec. 9, 1860.

E. H. Wood, Division Car Foreman, Ontario Division, C.P.R., Toronto, born at St. John, N.B., Dec. 30, 1880.

W. Wood, Locomotive Foreman, C.P.R., Sortin Yard, Montreal, born at Montreal, Dec. 6, 1863.

New Locomotive Design.—Another radical departure in locomotive design is being made in a large locomotive under construction for the Erie Rd. This unique locomotive is articulated in three parts, the weight of the tender being utilized as one section. The locomotive proper has a pair of pilot wheels, followed by two sets of four pairs of drivers, with the wheel arrangement under the tender the same as the leading locomotive section reversed. The intermediate section carries a pair of high pressure cylinders, with low pressure cylinder pairs on the front section and the tender. Locomotive and tender will weigh 800,000 lbs., and will develop 160,000 lbs. tractive force. The weight on one of the locomotive section drivers will be 480,000 lbs., and on the other, 260,000 lbs.

Thermal cracks exist commonly, if not invariably, in brakeshoes, and as the conditions of exposure of the shoe and tire are the same for the time being, under brake application the same tendencies necessarily exist for the formation of thermal cracks in each, but more accentuated in the shoe.

Canadian Pacific Railway Lake Superior Division Shops at North Bay.

The C.P.R. divisional shops at North Bay, Ont., having become inadequate to meet the requirements of the heavy traffic, the company set about enlarging the shops and mechanical yards to meet the new demands. This work was commenced last spring, and its extent is shown in the accompanying plan.

The shops prior to this change consisted of a 23 stall locomotive house, with small machine and blacksmith shops attached to the west end, and a freight car repair shed separate from these other buildings, some distance to the west. All these old buildings are shown in light or dotted lines, indicating the old shops that have been left or removed.

The locomotive house and machine shop annex have been retained, but to the west of them there is being added a combined machine and erecting shop, served by a transfer table running along the west frontage of the shop. The erecting shop will be 70 by 208 ft., and 43 ft. high, of a steel frame construction with brick walls, the whole resting on concrete foundations. The width of the shop is spanned by steel trusses, resting on columns at 20 ft. centres. The shop will have a 5 ton travelling crane serving the full length of the building. The runways will be composed of 15 in. I beams with 56 lb. rails on top. The roof will be of mill construction, with 8 by 14 in. purlins at 8 ft. centres carrying a 3 in. plank roof surfaced with tar and gravel.

There will be 10 tracks in the shop, each equipped with a locomotive pit, with one of the pits provided with an electric locomotive lift. Over the main walls of each pit the flooring will be of heavy 6 in. planking, about 3 ft. wide, to provide a solid jacking surface under the sides of the locomotive. The balance of the floor will be covered with 3 in. planking laid on cedar sills. The machine shop, to the rear of the erecting shop, and of the same length, 208 ft., will be 80 ft. wide, and 23 ft. high, of a similar construction to the erecting shop, except that steel I beams on steel columns at 26 ft. centres will be used. The floor will be of 3 in. planking on cedar sills. The shop will have all the necessary equipment in the way of tools, machines, and other mechanical devices, most of which will be mounted on concrete foundations.

One of the erecting shop tracks will extend through the machine shop and connect with the existing blacksmith shop track, while another will run longitudinally through the machine shop, connecting with the outside yard tracks through turntables. Both these tracks will facilitate the handling of parts through the shop. The new machine shop will be connected with the existing blacksmith shop and the present machine shop by means of a triangular annex. The present machine shop will be remodelled so as to provide additional boiler accommodation, as well as a new tool room and lavatory. Electric lighting and a hot air fan with heating ducts will be installed in both the new erecting and machine shops.

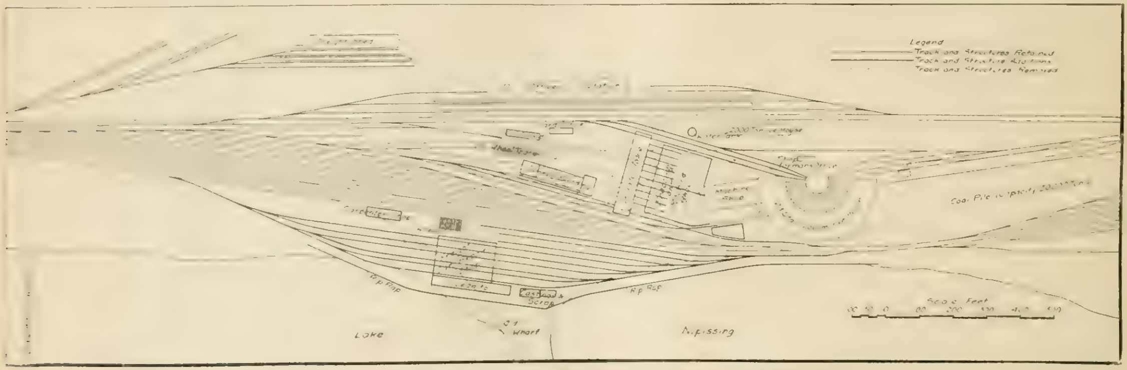
The transfer table along the front of the erecting shop will connect with the several erecting shop tracks with the main inbound track from the locomotive house and the yard runaround track, so that locomotives may be brought in from either side of the yard. The track alongside the stores building will also continue to the transfer table, facilitating the handling of the material to the machine and erecting shops. The transfer table will run on four tracks. The side walls of the transfer table pit will be composed of 8 in. square timbers resting on sills, and the ends of 2 in. planking and round cedar posts.

The old stores building will be moved to the new location shown, remodelled and placed on concrete foundations, with an extension added to the west end. The extended building will be 170 by 40 ft., with a basement the full length of the building. There will be an 8 ft. platform along the track side, with a 38 ft. platform on the side nearest the erecting shop.

The changes in the buildings around the locomotive house necessitated the removal of the old water tank to the new position to the north of the former location. The additions to the locomotive department buildings necessitated the removal of the car department buildings to a new site, which was formed along the south side of the yards by the reclamation of a portion of the frontage on Lake Nipissing, all the tracks in the lower portion of the yard, shown in heavy lines, being laid on made ground. The new freight car repair building will be 156 by 120 ft., and 30 ft. high, with a leanto annex 237 by 30 ft., and 13½ ft. high. The walls will be of frame construction, composed of 2 by 6 in. studs and lined on the outside only, and set on cedar sills. The main posts carrying the wooden trusses rest on solid concrete foundations. The shop will be divided into three 40 ft. bays, with the trusses at 19½ ft. centres. The roof will be of mill construction, composed of heavy purlins, with 2 by 3 in. planks laid on edge and finished with a 4 ply tar and gravel roof. The flooring will be of cinder. Electric lighting will be used, and hot air for the partial heating of the building, from a fan and engine located in the boiler room leanto.

There will be 6 standard gauge tracks in the shop, two in each bay, running the full length of the car repair yard, and connected by ladder tracks at each end to the main yard. Between each pair of these tracks, there will be a 2 ft. gauge service tracks connected together and to the wheel storage yard by small turntables and cross tracks. The repair yard tracks will be equipped with air, steam, and water pipes, and will be electrically lighted. The leanto will contain offices and auxiliary rooms.

The data on which the foregoing article is based was supplied by J. W. Orrock, Principal Assistant Engineer, and R. McKillop, Assistant Engineer, through the courtesy of J. M. R. Fairbairn, Assistant Chief Engineer.



Plan of Shops and Mechanical Yards, Canadian Pacific Railway, North Bay, Ont.

Car Failures.—A writer in a contemporary sums up his observations on the reasons for and manner of overcoming freight car failures by suggesting the following means of relief: 1. Reinforcing the older types of cars that will not stand the expense of a steel underframe, with a long metal draught arm that extends through and over the body bolster; this in turn to be reinforced or backed up with good heavy compression timbers. 2. On such cars as will permit of the expenditure, the application of a carefully designed steel underframe. 3. In all cases apply the draught gear that will destroy the greatest amount of shock with the entire elimination of recoil. 4. The adoption of a standard specification for the testing of draught gear to determine its shock absorbing capacity and amount of recoil, before purchasing. 5. Substitute for the wooden roof an all metal one as soon as it has been determined what the proper construction should be.

In general, the cost of oil in the tank, coal in the bin, or natural gas delivered, is used as the sole criterion of the economic status of a shop furnace plant; but the fallacy of this is demonstrated when it can be shown that the fuel cost is only a part of the total cost of successful burning, the labor charges in the different processes varying. Comparing oil and producer gas in a fair sized plant, the net cost of the heat units generated from producer gas are twice as costly as from oil, on account of the greater labor costs in the former.

Extension to Canadian Pacific Railway West Toronto Passenger Car Shops.

The four track addition to the existing C.P.R. passenger car repair shop at West Toronto, built last year, has in the short intervening time proved entirely inadequate to the requirements, calling for a further extension, which is now under way. The last addition was made to the north end of the existing shop, extending the shop to the northerly limit of the C.P.R. property. Along the front of this extended portion and the older portion, there is a transfer table, making possible the building of a further shop unit across from the present shop.

The addition now under way is being built on the north end of the transfer table, directly across from the last addition. It is a five track building, 114 by 137 ft., facing the narrow way on the transfer table frontage. The front portion, 105 ft. deep, will be for passenger car repairs, and the rear portion, 32 ft. deep, will house the bench work for all the shops, relieving the present mill building to that extent, as the latter is overcrowded.

The tracks are at 24 ft. centres, entered by jack knife doors in front. The roof is 24½ ft. high at the front, sloping back to 16 ft. over the bench work section. Over each of the four southerly tracks there is a 60 by 10 ft. monitor, equipped with ventilators. The building itself is of a red brick construction on concrete foundations. The roof is carried on the walls and 8 cross rows of 10 in. square wooden columns, at 15 ft. centres, the depth of the shop. The location of the columns is unique; in place of the usual location centrally between the tracks, making necessary the addition of light columns to which the adjustable platforms are attached, the main columns are placed in the location of the usual platform columns, dispensing with central ones, the adjustable platforms being secured in the usual manner to these columns. While the columns are larger than would be required for platform purposes alone, it leaves the central alley clear, and as far as shop space is concerned, the large columns occupy no more room and have the additional advantage of a clear alley. At the rear of the main part of the shop building there is a cross service track, over which the material from the mill is brought into the shop. This leads out a side door, and over a service track along the south side of the building to the transfer table. Mastic flooring is used throughout.

This new addition will increase the total capacity of the West Toronto shops to 20 cars. With this accommodation the shop capacity will be in the neighborhood of 80 cars a month. H. R. Naylor is General Foreman of the passenger car repair shop.

Pacific Great Eastern Railway Company's Annual Report.

Following are extracts from the report presented by J. W. Stewart, President and Chairman of the Board, at the annual meeting in Vancouver, B.C., recently:—

On June 28 last, an agreement was entered into with West Vancouver Municipality and with the property owners along the north shore of Burrard Inlet, and the English Bay, for the inauguration of an interurban service between Lonsdale Ave. and Dundar Ave. during the present year and a continuation of such service as far as Horseshoe Bay, on Howe Sound, before July 1, 1914.

By an agreement dated Nov. 7, 1912, the Howe Sound and Northern Ry. was acquired, the total capital stock being transferred to your company, which nominated the following directorate:—D'Arcy Tate, K.C., A. H. Sperry, A. H. Douglas, R. L. Reid, K.C., and D. S. Wallbridge. It is the intention that the Howe Sound Co. be wound up in due course, and absorbed into your company, as soon as separate corporate existence of that company becomes unnecessary.

During the past summer the Lieutenant-Governor, the Premier of British Columbia, the Attorney General, the Minister of Lands and the members for Vancouver in the Provincial Legislature made a trip of inspection of your line of railway from Vancouver to the crossing of the Cheakamus River and looked over the situation at the head of Howe Sound, where your railway from the north first meets tide water. They all expressed their satisfaction with what they had seen of the condition and progress of the undertaking. It is deemed worthy of mentioning the interest evinced in your project by the visit of John Scrimgeour, a London financier, who through the courtesy of P. Welch, in placing at the disposal of our local Vice President his private yacht, was enabled to make the trip up Howe Sound to Newport (as the place is now called). Mr. Scrimgeour was also shown over your property and the holdings of the development company at the head of the Sound and appeared to share your directors' expectations for the future development of that port.

On March 13 last, in pursuance of authority given at a special general meeting of shareholders, your fiscal agents in London brought out an issue of £1,000,000 4½% first mortgage guaranteed debenture stock at £99%, which was well received. On June 10 last, upon the recommendation of your fiscal agents in London, your directors authorized a further issue by private sale of £500,000 stock, of which to date £300,000 has been sold at prices ranging from £97 to £98.3%. When the sale of the balance authorized, viz., £200,000 has been effected, there will remain of the above stock £1,736,345, which will form the subject of a new issue.

Your directors have pleasure in reporting most satisfactory progress in the work of construction being prosecuted by the general contractor, P. Welch, and there are now between 3,000 and 4,000 men and a large plant engaged on the work. We have the contractor's confident assurance that it will be finished well within contract time. Your Chief Engineer has completed the location of the line between North Vancouver and Clinton, about 210 miles, and he now has four locating parties in the field between Clinton and Fort George. Lands have been secured, and it is proposed to establish yards and terminals at the head of Howe Sound and on the north shore of Burrard Inlet.

The Canadian Pacific Railway's Dining and Sleeping Car Departments.

One of the passenger department's bulletins states the company has 4,000 men employed in its sleeping and dining car departments. The bulletin says:—"The company takes especial care of its dining and sleeping car employes, and in many respects has gone further in this direction than any other line on the continent. All possible precautions are taken to see that all these employes are physically healthy and clean, and, with this end in view, a chain of homes for the men has been established across the continent. The C.P.R. is the only railway corporation today which provides this class of employes with free lodging and bed when away from their own homes. At all the large terminals, such as Toronto, Winnipeg, Moose Jaw, Calgary and Vancouver, the men are housed by the company, and the system is such that the company is able to positively assure the public that the men are free from disease, being subjected to periodic medical examination, and it being impossible for a dining or sleeping car employe to go out on his run without having first taken a bath and had his clothes freshly cleaned and pressed, absolutely without cost to himself.

"One of the most difficult problems which confronts the dining car department is the securing of sure and permanent sources of supply for its provisions, etc.; partly to attain this end, and also to show the farmers in various districts what could be done with their land if worked scientifically, demonstration farms have been established at various points, and the supplies regularly obtainable from these farms are constantly increasing in quantity. Soon the company will be able to secure fresh milk and cream in whatever quantities it desires—the milk and cream are not handled in bulk, but, after being pasteurized, are placed in sealed bottles with the date of milking shown thereon, and these bottles are opened only in the presence of the passenger. Sufficiently large numbers of poultry can be kept to supply all fowls and eggs possibly required for the table; to ensure fresh eggs for the dining cars, the eggs as gathered from the nest are stamped with the date, packed in cartons and sealed for the commissary stores, to turn over to the dining cars as needed. Other demonstration farm products are handled with equal care.

"It has been decided to establish a chain of C.P.R. bakeshops at such terminal points between Halifax and Vancouver as will ensure a complete restocking of dining cars with fresh bread, cakes and pastry every 15 hours—Montreal, Toronto, Winnipeg, Moose Jaw, Calgary and Vancouver will be among the points provided for in this way."

Edison Uses His Old Telegraph Instrument Again.

At the meeting of the old time Telegraphers' Historical Association of the United States at Mount Clemens, Mich., recently, T. A. Edison sent a message over the wire to President Wilson. The occasion was of special interest, because Mr. Edison stood upon the same site where he stood when he sent his first message as a telegraph operator, and used the same instrument he used 51 years ago when, as a boy of 14, he sent his first message over the G.T.R. lines.

Back in the pre-telegraphic days, when Edison was only a newspaper boy on the G.T.R., he showed his youthful enterprise by printing and selling a small newspaper containing the news along his route. He kept a little font of type in the baggage car and printed the paper on the train, so its items were strictly up to the minute. It was during this period that a trainman lifted him by the ears, later causing the deafness that now blurs his hearing.

Renewals of Crown Stays or Stay Bolts.—The Board of Railway Commissioners has issued the following circular:—"In connection with order 14,115, re inspection of locomotive boilers, it is found on checking over reports received, that few of the reports show renewals of either crown stays or stay bolts, as per question 8 of the monthly and 17 of the annual reports. As the intent of these questions is to show how these repairs are being kept up, it is important that all these renewals be shown when made either at the time of inspection or repair."

Orders by Board of Railway Commissioners for Canada.

Panoramic View of Union Stock Yards, St. Boniface, Man. See opposite page.

Beginning with June, 1904, Canadian Railway and Marine World has published in each issue summaries of orders passed by the Board of Railway Commissioners, so that subscribers who have filed our paper have a continuous record of the Board's proceedings. No other paper has done this.

The dates given of orders, immediately following the numbers, are those on which the hearings took place, and not those on which the orders were issued. In many cases orders are not issued for a considerable time after the dates assigned to them.

20497. Oct. 4.—Authorizing G. T. Pacific Ry. to build spur and sidings for Pembina Coal Co. in Sec. 19 and [illegible]-53-7, w. 5 m., Alta.

20498. Oct. 6.—Extending express collection and delivery area in Ottawa.

20499. Oct. 6.—Authorizing C. N. Ontario Ry. to build bridge across Ottawa River at Fitzroy Harbor, mileage 37.32 west of Ottawa.

20500. Oct. 1.—Authorizing C. N. Ontario Ry. to cross, at grade, Metcalfe, John, Harvey, Bourke, Jane, Durrill, Copeland, Bell, William, McIntyre, Timmons and Nipissing Sts., North Bay, and certain streets and avenues by subways; to build across and divert Marion St.; closing of Cedar St. to be conditional on the extension of McLaren St. from Klock Ave. to Home Ave.; the closing of Fraser St. to be conditional on the building of a subway [illegible] ft. clear width and 8 ft. high through station and under tracks; station to be located in centre of Fraser St., of similar design to the one at Belleville, and company to be responsible for any damages property owners affected may be legally entitled to recover, and all subways to be satisfactorily drained.

20501. Oct. 6.—Extending, to Dec. 31, time within which C.P.R. was required to build subway at Dundas St., Woodstock, Ont.

20502. Oct. 6.—Approving revised location of C.P.R. double track, Moose Jaw Subdivision, Sask., from mileage 59.6 to 60.45; and authorizing it to build road diversion across Blocks 147, 148, 149 and [illegible] and across Sec. 27-18-15, w. 2 m., and to build at grade across same and town crossing.

20503. Oct. 6.—Authorizing Saskatchewan Government to build highway across C.P.R. Swift Current Northwesterly Branch.

20504. Oct. 7.—Amending order 20190, Aug. 26, re location of C.P.R. station at Conrad, Alta.

20505. Oct. 6.—Approving location of Campbellford, Lake Ontario and Western Ry. (C.P.R.) station [illegible] east of Fox St., Port Hope, Ont., mileage 125.70 from Glen Tay.

20506. Oct. 6.—Approving location of C. N. Ontario Ry. station grounds at Master, mileage 111.05, and Kathmore, mileage 115.5, from Ottawa.

20507. Oct. 6.—Ordering C.P.R. to build additional track to present siding for Dodge Mfg. Co., West Toronto; to be completed within 60 days.

20508. Oct. 7.—Authorizing C.P.R. to build, at grade, spur to Broadacres ballast pit across highway between Secs. 7 and 8, Con. 36, R. 21, w. 3 m., on its Kerrobert Northeasterly Branch.

20509. Oct. 7.—Authorizing C.P.R. to use bridges 27.4 and 13.9, St. Stephen Subdivision, N.B.

20510. Oct. 7.—Authorizing C.P.R. to build bridge 15.6, for double track, over Eagle River, Shuswap Subdivision, B.C.

20511. Oct. 7.—Authorizing C.P.R. to use bridge 30.5, Gibson Subdivision, N.B.

20512. Oct. 7.—Extending, to Dec. 31, time within which G.T.R. shall install interlocking plant at Paris [illegible], as approved by order [illegible], Feb. 18.

20513. Oct. 7.—Authorizing, temporarily, G. T. Pacific Branch Lines Co. to carry traffic over portion of its Cutknife Branch between Battleford and Rossman station, mileage 0 to 33.6, Sask.; speed of trains not to exceed 15 miles an hour.

20514. Oct. 6.—Ordering Michigan Central Rd., within 60 days, to install illuminated electric sign and improved type of automatic electric bell at highway crossing at Townsend station, Ont., 20% of cost of installation to be paid out of the railway grade crossing fund.

20515. Oct. 7.—Approving revised location of Canadian Northern Ry. Delisle-Alsask Branch in s. e. ¼ Sec. 9-26-17, w. 3 m., Sask., mileage 62.5.

20516. Oct. 6.—Amending order 19731, July 3, to provide that Winnipeg, Selkirk and Lake Winnipeg Ry. operate its cars across C.P.R. from 6 a.m. to 11 p.m., instead of 9.45 a.m. to [illegible] p.m. and 12.30 a.m. to 6.30 a.m.

20517. Oct. 7.—Authorizing C. N. Ontario Ry. to build bridge over White's Creek, mileage 64.9 from Toronto.

20518. Oct. 11.—Approving G. T. Pacific Ry. station site and station of G. T. P. Ry. at Fort Fraser, mileage 372.8, Prince Rupert East, B.C.

20519. Oct. 9.—Authorizing G. T. Pacific Branch Lines Co. to build its Tofield-Calgary Branch across highway at mileage 196.6, South Alberta District.

20520. Oct. 14.—Authorizing G. T. Pacific Ry. to build across 2 highways at mileage 370 and 373, Prince Rupert East, B.C.

20521. Oct. 8.—Amending order 20402, Sept. 24, by substituting G. T. Pacific Branch Lines Co.'s Regina-Boundary Branch for G. T. Pacific Ry., re highway to be built by Saskatchewan Government.

20522. Oct. 7.—Authorizing G. T. Pacific Branch Lines Co. to operate its trains over crossing of C.P.R. Calgary to Edmonton Branch, in Calgary, Alta., pending installation of interlocking plant.

20523. Oct. 9.—Authorizing G. T. Pacific Ry. to build across highway and make road diversion, mileage 15.8, Round Valley Rural Municipality 410, Sask.

20524. Oct. 8.—Authorizing C.P.R. to use bridges 36.5, 43.8, 43.4, 43.3, 34.4, 34.8, 30.7 and 32.2, Farnham Subdivision, Que.

20525. Oct. 6.—Authorizing C.P.R. to operate its trains over crossing of London St. Ry., at Adelaide St., London, Ont., without previously stopping.

20526. Oct. 7.—Authorizing C.P.R. to build double track across St. Francois-Xavier and Jacques Cartier Sts., Farnham, Que.

20527. Oct. 11.—Authorizing C.P.R. to build crossing over its line at Ensign, Alta.

20528. Oct. 8.—Authorizing C.P.R. to open for traffic portion of double track between mileage 70 and Herbert, mileage 81.9, Swift Current Subdivision, Sask.

20529. Oct. 10.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to divert road in Lot 26, Con. 1, Bedford Tp., between Cons. 1 and 2, to a crossing at mileage 23.71, authorized under order 16758, June 15, 1912, work, with exception of fencing, to be done by Bedford Tp. and completed by July 31, 1914.

20530. Oct. 14.—Approving location and revised location of C.P.R. Weyburn-Stirling Branch, from mileage 24.74 to 64.34.

20531. Oct. 14.—Authorizing C.P.R. to build bridge 19.8 over Chambly Canal, St. Johns, Que.

20532. Oct. 14.—Extending, to May 1, 1914, time within which C.P.R. shall build spur for Coquitlam Terminal Co., Vancouver, B.C.

20533. Oct. 14.—Authorizing C.P.R. to build at grade its gravel pit spur at Waldeck, Sask., across two highways.

20534. Oct. 7.—Authorizing C.P.R. to build spur for Calgary Stock Yards Co., Calgary Alta., and rescinding order 19472, June 4, in same connection.

20535. Oct. 9.—Authorizing C.P.R. to build siding for D. L. Streight at Islington, Ont.

20536. Oct. 8.—Authorizing C.P.R. to use bridges 35.8, 26.6 and 28.8, Farnham Subdivision, Que.

20537. Oct. 9.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to build bridge over Smithfield Creek, near mileage 93.7, Ont.

20538. Oct. 14.—Approving location of Campbellford, Lake Ontario and Western Ry. (C.P.R.) station in Clarke Tp., at mileage 143.03 from Glen Tay, Ont.

20539, 20540. Oct. 10, 9.—Authorizing C.P.R. to build spurs for City of Moose Jaw, Sask., and for J. K. McInnis, Regina, Sask.

20541. Oct. 10.—Authorizing C.P.R. to build bridge 117.42, Shuswap Subdivision, B.C.

20542. Oct. 10.—Authorizing C.P.R. to build spurs for Imperial Oil Co. and Calgary Brewing and Malting Co., Bassano, Alta.

20543. Oct. 13.—Authorizing C.P.R. to build at grade its passing track and leg of Y across road allowance between Secs. 35 and 36-14-13, w. p. m., Minnedosa Subdivision, Man.

20544. Oct. 6.—Authorizing C.P.R. to build at grade, extension to town siding at Ekoba, across public road, McDonald Tp., Algoma District, Ont.

20545. Oct. 9.—Approving C.P.R. plan, as amended by the Board's Chief Engineer, showing interlocking plant to be installed on temporary trestle at Pitt River, bridge 109.7, Cascade Subdivision, B.C.

20546. Oct. 13.—Authorizing Esquimalt and Nanaimo Ry. to open for freight traffic portion of its line from McBride Jct., to Courtenay, Vancouver Island, 8.5 miles; speed of trains limited to 12 miles an hour.

20547. Oct. 8.—Authorizing Canadian Northern Ry. to open for freight traffic its line from St. Albert, westerly to mileage 22, 2[illegible] miles, Alta.

20548. Oct. 14.—Approving clearances as shown in plan of Moose Jaw Cold Storage Co.'s building on C.P.R. at Moose Jaw, Sask., subject to conditions that men keep off sides of cars; and that speed of cars on siding be limited to 4 miles an hour.

20549. Oct. 6.—Approving location of C.P.R. station at Uptergrove, mileage 55.64, Port McNicoll Subdivision, Ont.

20550. Oct. 14.—Authorizing Osgoode Tp., Ont., to build highway crossing over C.P.R. gravel pit spur in Lots 27 and 28, Con. 1.

20551. Oct. 9.—Authorizing Toronto, Hamilton and Buffalo Ry. to open for traffic portion of second track from Welland River to Fenwick Station, mile-

20552. Sept. 18.—Dismissing complaint of certain residents of March and Torbolton Tps., Ont., against location C.N. Ontario Ry. station at mileage 22 from Ottawa, approved by order 17342, Aug. 27, 1912.

20553. Oct. 11.—Extending, to Dec. 1, time within which British Columbia Electric Ry. shall complete work at crossing of Esquimalt and Nanaimo Ry. near Russell, B.C., as required by order 18733, Feb. 18.

20554, 20555. Oct. 10.—Relieving Red Mountain Ry. (G.N.R.) from fencing certain portions of its right of way from International boundary, south of Patterson, to Rossland, B.C., and relieving Vancouver, Victoria and Eastern Ry. and Navigation Co. (G.N.R.) from fencing certain portions of its right of way from Midway to International boundary, west of Bridesville, B.C.

20556. Oct. 10.—Authorizing Edmonton, Dunvegan and British Columbia Ry. to build across 15 highways in Alberta.

20557. Oct. 9.—Ordering G.T.R. to build farm crossing to C. [illegible] Lot [illegible], [illegible] Rainy, Rainy Tp., Ont.

20558. Oct. 13.—Authorizing G.T.R. to [illegible] bridge 278, at mileage [illegible], District 13, over Nottawasaga River, near Beeton, Ont.

20559. Oct. 14.—Authorizing G.T.R. to [illegible] ing for Canada [illegible] Co., [illegible]quesing Tp., Ont.

20560. Oct. 13.—Authorizing G.T.R. to [illegible] bridge [illegible], at mileage [illegible], District 3[illegible], Ottawa Division, Ont., over Joe Creek.

20561. Oct. 10.—Authorizing G.T.R. to operate over swing bridge across Welland Canal and railway crossing at Port Colborne, Ont., without their first stopping trains.

20562. Oct. 14.—Authorizing C.P.R. to take all that portion of s.e. ¼ Sec. 8, Tp. 12, r. 19, w. 2 m., for building a reservoir.

20563. Oct. 13.—Approving location of Campbellford, Lake Ontario and Western Ry. (C.P.R.) station northwest of Beech St. and east of Brock St., W[illegible]by, mileage [illegible] from Glen Tay, Ont.

20564. Oct. 8.—Rescinding order [illegible]45, Aug. 30, re Supplement 17 to Tariff C.R.C. W-1615.

20565. Oct. 9.—Authorizing C.N. Ontario Ry. to build across and divert Second Ave., North Bay.

20566. Oct. 6.—Relieving Michigan Central Rd. from maintaining cattle guards at crossing of Plymouth Road, Welland, Ont.

20567. Oct. 15.—Extending to Dec. 1, time within which C.P.R. shall install bell at highway crossing, mileage 0.91 from St. Martins Jct., Que., as required by order 19005, July 25.

20568. Oct. 8.—Approving location of Campbellford, Lake Ontario and Western Ry. (C.P.R.) station at Overton, mileage 53 from Glen Tay, Ont.

20569. Oct. 7.—Approving location of C.N. Ontario Ry. station grounds at Remi, Que.

20570, 20571. Oct. 8.—Establishing Dominion Ex. Co. collection and delivery limits in Kelowna, B.C., and Knowlton, Que.

20572. Oct. 15.—Authorizing C.P.R. to make diversion in Sec. 30-22-26, w. 3 m., Sask.; and to build its Swift Current Northwesterly Branch across same at mileage 90.13.

20573. Oct. 15.—Authorizing C.P.R. to build at grade across Government Road, in Lot 2567 (Provincial Government Survey), Kootenay District, B.C., at mileage 42.37.

20574. Sept. 11.—Approving location of C.P.R. station at Empress, Sask.

20575. Oct. 7.—Authorizing C.P.R. to build siding for Canadian Connecticut Cotton Mills Co., Sherbrooke, Que.

20576. Oct. 7.—Authorizing C.P.R. to relocate siding for J. A. Villemaire, Campbell Tp., Que.

20577. Sept. 23.—Amending order 16671, re G.T.R. Cannon St. yard, Hamilton, Ont.

20578. Oct. 14.—Authorizing Kettle Valley Ry. to build bridge over Fraser River at Hope, B.C.

20579. Oct. 7.—Authorizing Quebec, Montreal and Southern Ry. to build siding for Mount Royal Brick Co., Varennes Parish, Que.

20580. Oct. 15.—Approving City of Toronto plans 28 and 31, showing viaduct carrying Bloor St. across C.P.R., C.N.R. and G.T.R., authorized by order 20437, Sept. 23.

20581. Oct. 8.—Authorizing Canadian Northern Ry. to connect with Manitoba and Saskatchewan Coal Co.'s spur near Bienfait, Sask.

20582, 20583. Oct. 15.—Approving deviation of Lake Erie and Northern Ry. between stations 745 and 793, Townsend Tp., and authorizing it to build across highways between stations 771+97.5 and 772+60.5, and at station 613.3.

20584. Oct. 16.—Suspending, pending determination of matter by Board, cancellation as from Nov. 1 of inter-warehouse arrangement for completion of carload shipments of grain, notice of which is given by Supplement 28 to C.P.R. Tariff C.R.C. E[illegible], and Supplement [illegible] to G.T.R. Tariff C.R.C. E[illegible].

20585. Oct. 16.—Approving [illegible] Lake Erie and Northern Ry. [illegible] Ave., [illegible], Brantford, Ont.

20586. Oct. 16.—R[illegible] 191[illegible], in so far as it authorized crossing by C.N. Ontario Ry. of [illegible] St. Laurent Parish, Que.

20587. Oct. 16.—Extending to Nov. 18, time within which C.P.R. shall install bell at Miller crossing, [illegible] mile west of K[illegible] [illegible] Oct. 30, time within which bell at crossing of river road, about 3 miles east of Kingsbury, between Melbourne and Windsor Mills, Que., be installed.

20588. Oct. 16.—Approving Canadian Northern Ry. plan of Sept. 10, substituted for plans approved by order 20058, authorizing building of spur across n.e. ¼, Sec. 15, and n.w. ¼, Sec. 14-37-5, w. 3 m., Sask., and ordering that order 20058, Aug. 11, be amended accordingly.

20589. Oct. 15.—Authorizing C.P.R. to build siding for Canadian Wire Co., Ltd., Montreal.

20590. Oct. 4.—Authorizing G.T.R. to rebuild bridge 202, over Big East River, mileage 150.75, District 12, near Huntsville, Ont.

20591. Oct. 16.—Authorizing G.T. Pacific Ry. to build across and divert highway in Charles Indian Reserve, mileage 317, Prince Rupert East, Coast Dist., B.C.

20592. Oct. 16.—Approving location C.N. Ontario Ry. station grounds at Isle Jesus, mileage 38.95, Hawkesbury East, Que.

20593. Oct. 17.—Authorizing C.P.R. to use Canadian Northern Ry. spur to Government Elevator at Port Arthur, Ont.

20594, 20595. Oct. 17.—Authorizing C.P.R. to build at grade an extra track across road allowance between Secs. 27 and 34-21-31, w.p.m., at Langenburg, Sask., and to build ballast pit spur at grade across road allowance in north half of Sec. 5-7-19, w. 4 m.

20596, 20597. Oct. 17.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to build bridge 121.29 across road allowance between Lots 22 and 23, Con. A, Hamilton Tp.; to build across Sinclair St., Cobourg, by an undercrossing, at mileage 120.6, and rescinding order 19093, Apr. 19, in so far as it authorizes crossing of Sinclair St. at grade.

20598. Oct. 15.—Ordering G.T. Pacific Ry., within 10 days, to build crossing opposite Lot 384, Queen St., Fort William, Ont.

20599. Oct. 16.—Ordering Canadian Northern Ry. to move loading platform at Bryant station, Sask., to a point convenient to west end of yard, and to grade driveways to loading platform.

20600. Oct. 17.—Approving plan and specifications of Fleming-Wigle drain, to be built under Windsor, Essex and Lake Shore Rapid Ry.

20601. Oct. 18.—Authorizing G.T.R. to build temporary additional track across road allowance between Cons. 1 and 2, Brantford Tp., Ont.

20602. Oct. 18.—Removing speed restrictions of 20 miles an hour over portion of C.P.R. Kerrobert Northeasterly Branch, Sask., from mileage 0 to 25, and of 15 miles an hour from mileage [illegible].

20603. Oct. 18.—Approving location of G.T.R. station at Seagrave, Ont., to replace one burnt.

20604. Oct. 8.—Approving C.N. Ontario Ry. plan D 29-1 of subway to be built at Wylde St., North Bay.

20605. Oct. 17.—Authorizing G.T.R. to rebuild bridge 58, at mileage 146.42 from Black Rock, 2.11 miles east of Clinton station, Ont.

20606. Oct. 18.—Approving location of Esquimalt and Nanaimo Ry. station at Qualicum Beach, Vancouver Island, B.C.

20607. Oct. 18.—Authorizing C.P.R. to build spur for Continental Oil Co., Winnipeg, Man.

[illegible] B[illegible] W[illegible] [illegible] to [illegible]

20609. Oct. 1[illegible].—Approving [illegible] Campbellford Lake Ontario and Western Ry. (C.P.R.), Glen Tay to Cobourg Line; rescinding [illegible] tion; authorizing it to take portions of C.N. Ontario Ry. right of way tracks; authorizing City of Belleville to lay water pipe under C.N.O.R. at foot of M[illegible].

20610. Oct. 17.—Amending order 20318, Sept. 1[illegible], [illegible] Ma[illegible].

20611. [illegible] C.P.R. [illegible] temporary interlocking appliances, until June 30, 1914, [illegible] at mileage 18.81 from Farnham, Que.

20612. Oct. [illegible] Regina, Sask., to build its municipal railway over C.P.R. Bulyea and Colonsay Branch at intersection of 4th Ave., Eastview, Regina.

20613. Oct. 17.—Authorizing Ancaster Tp., Ont., to build Broadway Ave. across Toronto, Hamilton and Buffalo Ry. in West Hamilton, Ont., and dismissing application as to other crossings.

20614. Oct. 17.—Authorizing G.T. Pacific Ry. to build spurs across Vickers St., Fort William, Ont., to its proposed freight yards and approving location [illegible].

20615. Oct 17.—Amending order 19248, June 4, re Lake Erie and Northern Ry. construction.

20616. Oct. 21.—Authorizing Hamilton St. Ry. to operate over Toronto, Hamilton and Buffalo Ry. crossing at intersection of Main and Trolley Sts.; interlocking plant to be installed by Nov. 30.

20617. Oct. 18.—Authorizing G.T.R. to operate jointly with C.P.R. the latter's branch to Canada Foundry Co., north of Royce Ave., Toronto, G.T.R. to pay a yearly rental equal to [illegible] per annum, on half the cost of construction [illegible] and maintenance.

20618. Oct. 21.—Ordering G.T.R., within three months, to install gates to cover all tracks and sidings at crossing of first highway east of Clarkson station, Ont., to be operated by day and night watchmen; apportionment of cost reserved for further consideration; if gates are not in operation within three months, expense of watchmen employed will be borne by G.T.R. until gates are installed.

20619. Oct. 17.—Authorizing G.T.R. to build siding for Quinlan & Robertson on Lot. 10, Con. 9, Huntingdon Tp., Ont.

20620. Oct. 21—Ordering G.T.R. to install, within 90 days, improved type of automatic electric bell at crossing on Third line, immediately west of Etobicoke River, between Lots 5 and 6, Con. 2, south of Dundas St., Toronto Tp.; 20% of cost to be paid out of the railway grade crossing fund.

20621. Oct. 18.—Ordering G.T.R. to build siding for St. Marys Portland Cement Co., Blanshard Tp., Ont., and to connect same with existing siding and spurs, and rescinding order 19365, May 21, in same connection.

20622. Oct. 21.—Authorizing C.P.R. to build diversion in s.w. ¼ Sec. 6-5-17, w. 4 m., at McNabb, Alta.

20623. Oct. 21.—Extending, to Dec. 15, time within which C.P.R. shall install electric bell at crossing of Main St., Milverton, Ont.

20624. Oct. 22.—Relieving C.P.R. from providing further protection at crossing known as Cote du Sud, mileage 11 from Place Viger station, Montreal.

20625. Oct. 16.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to build tracks, for nine months from date, over portion of forced road running through Lot 24, Con. 8, Camden Tp., at mileage 46.3.

Panoramic View of Union Stock Yards, St. Boniface, Man. See opposite page.

[illegible]

[illegible] G.T.R. cross- [illegible]

[illegible] G.T.R. [illegible]

[illegible] Batte [illegible]

[illegible] tween C.P.R. and Kettle Valley Ry. re interchange [illegible]

[illegible] ford, Lake Ontario and Western Ry. (C.P.R.) sta- [illegible]

[illegible] nd St. Ry. at point [illegible]

[illegible] Esquimalt and Nanaimo Ry. [illegible] Wellington Colliery [illegible] safety switch [illegible] station [illegible] to be flagged over [illegible] half the cost; and [illegible] Wellington Colliery [illegible] to cross Esquimalt and Nanaimo Ry. at mileage 5.924.

[illegible]

20690. Oct. 29.—Authorizing C.P.R. to build [illegible]

[illegible] C.P.R. [illegible] C.N.R. [illegible]

[illegible] C.P.R. to build [illegible] Regina, Sask.

[illegible] C.P.R. station at Oakshela, Moose Jaw Subdivision, Sask.

20694. Nov. 3.—Authorizing C.P.R. to build temporary spur for Carter-Halls-Aldinger Co., Winni- [illegible]

[illegible] —Authorizing C.P.R. to open for [illegible] Subdivision, Sask.

[illegible] C.P.R. to build siding [illegible]

[illegible] International Harvester Co., [illegible]

[illegible] G.T.R. shall complete siding [illegible] Structural Steel Co. on Lot [illegible] Ont.

[illegible] G.T.R. on n. ½ Lot 9, Con. 4, Elgin Tp., Ont.

[illegible] Ry. station site and station at Tyee, mileage 26.5, Prince Rupert East, B.C.

[illegible] re G.T.R. subway at crossing of Thompson Rd., Bertie Tp., Ont.

[illegible] G.T.R. to build siding for Gidley Boat Co., Penetanguishene, Ont.

20703. Oct. 30.—Amending order 19759, July 4, re Hamilton St. Ry. crossing of Toronto, Hamilton and Buffalo Ry. spur, Hamilton, Ont.

20704. Oct. 30.—Amending order 19764, July 4, re Toronto, Hamilton and Buffalo Ry. crossing of Hamilton Radial Ry. at Burlington St., Hamilton, Ont., and extending, for 3 months from date, time for completion of work.

20705. Nov. 3.—Approving location of Canadian [illegible]

[illegible] Canadian Northern Ry. Greenway Branch through Secs. 2 and 3, Tp. 3, R. 23, w. p. m., Man., from [illegible]

[illegible] C.N. Ontario Ry. station grounds at Deseronto, at mileage 134 from East Don.

20708. Oct. 31.—Authorizing Michigan Central [illegible] plan; siding to be completed in 3 months [illegible]

[illegible] C.P.R. to build spurs for Renfrew White Granite Co. at Haley's station, Ont.; and McCormick Manufactur- [illegible]

[illegible] Hamilton [illegible] spur, with two branches, [illegible] Hamilton, Ont.

[illegible]

20715. Nov. 4.—Authorizing Canadian Northern Ry. to build across 5 highways on its Calgary-Macleod Branch, Alta.

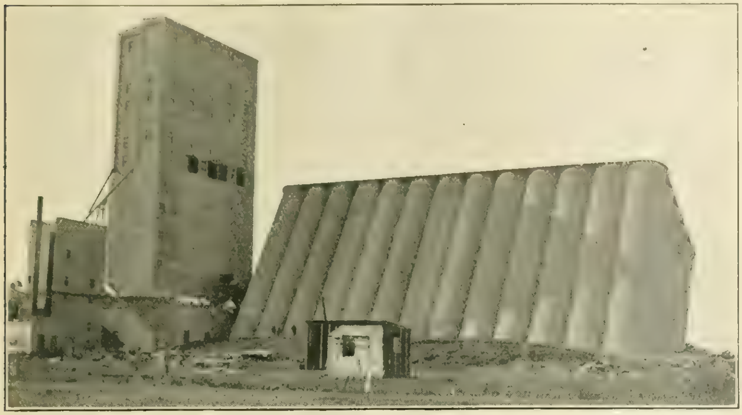
[illegible]

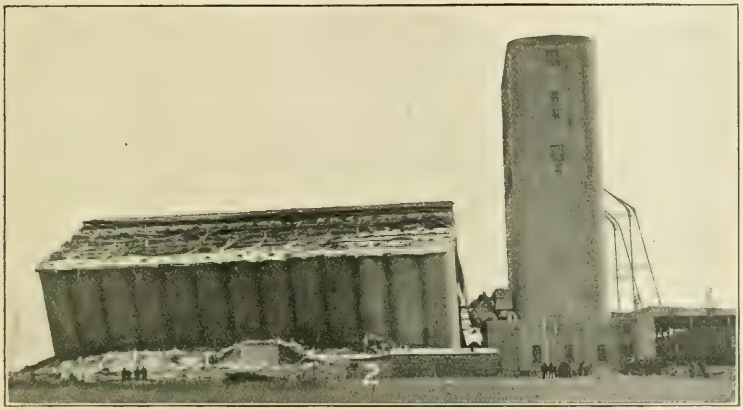
[illegible] Oct. 30.—Approving revised location of [illegible]

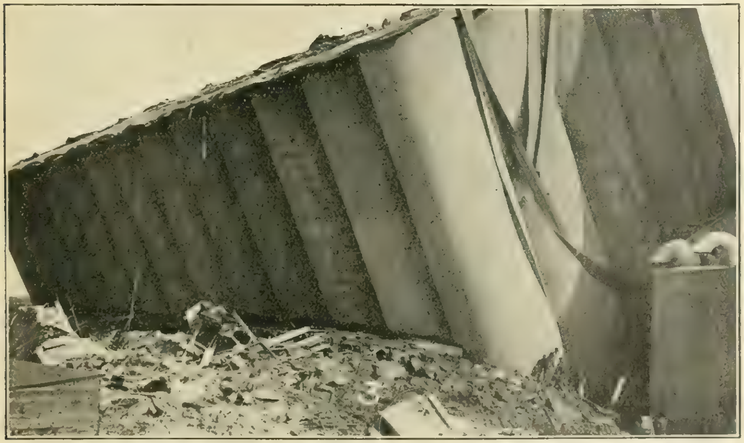
[illegible] C.P.R. [illegible]

[illegible] C.P.R. [illegible] Devcher Ave., [illegible]

The Failure of the Canadian Pacific Railway's Grain Elevator at Transcona.

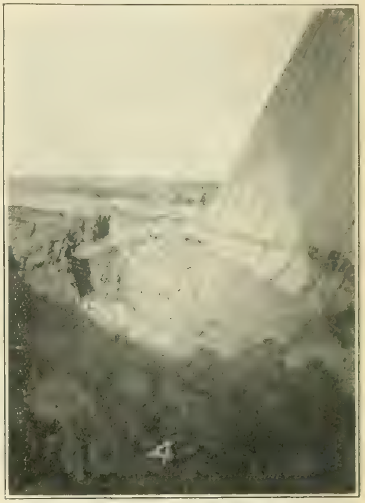






The failure of the C.P.R.'s. grain elevator at Transcona, Man., by which the reinforced concrete bin house settled into the ground, by the crushing out of the foundation subsoil, and at the same time tilted to the position shown in the accompanying illustrations was briefly referred to in Canadian Railway and Marine World for November. On Oct. 18, between 11 a.m. and noon, the elevator then being practically full, movement was noticed on the bridge between the working house and the binhouse. By 1 p.m. the binhouse had settled about 1 ft. The ground for 25 to 30 ft. on the north, west and east sides of the binhouse heaved up 1 or 2 ft. In the afternoon the settlement became a little more rapid on the west side, producing a list to the west. The building continued to settle and list for about 24 hours, until noon, Oct. 19. Its final position is at an angle of about 28° from the vertical. The east side of the house is raised about 5 ft. above normal level, while the west side is some 30 ft. below normal. The conveyor cupola and roof structure slid off the binhouse when the tilt became too great, which occurred about midnight Oct. 18. The structure of the binhouse shows practically no damage in its visible part, except for a few small hair cracks. The displacement of the underlying strata of earth is well shown by the upheaved ridges of earth around the elevator. The detail view, no. 4, gives some idea of the surface disturbance. This shows the ridge along the east of the binhouse, seen sharply outlined in view 1.

The elevator was built in the summer of 1912. It consists of a working house, seen in the views standing undisturbed just south of the displaced structure, and a reinforced concrete binhouse. The latter consists of 65 circular bins of 14 ft. 4 in. inside diameter and 90 ft. deep, arranged in 5 rows of 13 bins each (5 along the working house, 13 in the direction at right angles to it). The 48 interspaces between the circular bins were also used for grain storage. The binhouse was 10 ft. north of the working house, and structurally distinct from it, being connected with it only at the conveyor level, just above the top of the bins, where the conveyor which operates in the low cupola over the binhouse is carried across to the working house. The principal machinery floors of the working house are above the conveyor level.



The soil at the site is soft clay ground. Rock is 45 to 50 ft. below the surface. The binhouse was founded on a reinforced concrete slab, 77 by 195 ft., about 12 ft. below the surface of the ground. In excavating for the construction of this foundation, the upper 5 or 6 ft. of ground were found rather soft. Below this, however, a fairly stiff clay was struck. Load tests were made at the time, and they indicated that the soil was well able to bear a load of 4 to 5 tons per sq. ft. The maximum loaded weight of the binhouse averaged a little over 2½ tons per sq. ft. The foundation was put in during July, 1912, and the soil was perfectly dry, with no indication of water. Barnet-McQueen Co., Ltd., of Minneapolis, designed and built the elevator.

Rafts or floating foundations of the kind used in this case are commonly used for elevator foundations in the Winnipeg territory. The working house of the present elevator rests on a similar slab foundation.

The question of saving the grain in the elevator occupied first attention. The binhouse held nearly its full capacity of 1,000,000 bushels. The bins were tapped through the sides and a temporary conveyor erected alongside for taking the grain to railway cars, and the removal when started progressed at the rate of about 40 carloads a day, the whole of the grain being removed by Nov. 10. It was feared at first that ground water would enter the bins at the bottom and would wet the lower part of the grain. This was found not to be the case, and the absence of water is held to indicate that the accident is not chargeable to wet condition of the subsoil.

The foregoing facts have been compiled from information kindly furnished by J. G. Sullivan, Chief Engineer, C.P.R. Western Lines, to whom we are indebted for the photographs from which the accompanying illustrations have been made.

View 1 is taken from the southwest. It shows the working house undisturbed, though only 10 ft. from the binhouse. The ridge of earth in front is the result of the subsurface flow of oil. View 2 shows the west side of the elevator, with the bin tops exposed, after the cupola slid off. There is a 30 ft. subsidence on this side, the whole length of the binhouse having settled practically uniformly. View 3 shows the southwest corner of the binhouse, with the wreckage of the cupola and roof lying at its foot. View 4 shows the east side, with the adjacent soil upheaved.

Traffic Orders by the Board of Railway Commissioners.

The dates given for orders are those on which the hearings took place, and not those on which the orders were issued:—

G.T.P.R. Freight Rates in British Columbia.

20441. Sept. 27.—Re application of G.T. Pacific Ry., under sec. 327 of the Railway Act, for approval of its Standard Freight Mileage Tariff C.R.C. no. 19, cancelling C.R.C. 17 approved by order 19866, to apply between stations in British Columbia, Prince Rupert to Siding 9, mile 301, inclusive. It is ordered that the said tariff be temporarily approved, pending judgment in the inquiry into rates charged generally by railway companies in British Columbia.

Rates on Lumber, Shingles, Etc.

20564. Oct. 8. Re Supplement 17 to Tariff C.R.C. no. W-1615, filed by C.P.R., effective Sept. 3, 1913, increasing rates on lumber, shingles, and other articles taking lumber rates, from British Columbia coast and interior mills to points on its Sault Ste. Marie Division; and order 20245, Aug. 30, 1913, suspending effective date of the said advanced rates for 30 days from date of the order: it is ordered that order 20245 be rescinded.

Inter Warehouse Arrangements for Grain Shipment.

20584. Oct. 16. Re Supplement 28 to C.P.R. Tariff C.R.C. no. E-2141, and Supplement 18 to G.T.R. Tariff C.R.C. No. E-2374, cancelling as from Nov. 1, 1913, the inter warehouse arrangement for completion of carload shipments of grain:—Upon reading the application of the Toronto Board of Trade protesting against the proposed cancellation, and asking that the railway companies file their reasons therefor, and that the Board suspend the supplements pending justification by the companies, it is ordered that the cancellation be suspended, pending the hearing and determination of the matter by the Board.

Montreal and Southern Counties Ry. Passenger Fares.

20659. Oct. 23. Re the application of the Montreal and Southern Counties Ry., under sec. 331 of the Railway Act, for approval of its standard tariff of maximum passenger tolls, C.R.C. No. 4, on the basis of 2½c. a mile, to apply between stations south of the St. Lawrence River, it is ordered that order 19702, June 27, 1913, be rescinded; that the company's standard passenger tariff above mentioned be approved.

Sand, Gravel and Concrete Material Rates.

20660. Oct. 24. Re application of Clifton Sand, Gravel and Construction Co. for an order reducing, adjusting and fixing the rates on sand, gravel and concrete material between Stamford, Ont., and surrounding points in Ontario, including Niagara Falls, Chippewa, Welland, Port Colborne, Thorold, Merritton, St. Catharines, Hamilton and Toronto and intermediate points, it is ordered that the application be dismissed.

Rates from Estevan to C.N.R. Stations.

20681. Oct. 27. Re application of Board of Trade, Estevan, Sask., for an order directing Canadian Pacific and Canadian Northern Railway Companies to establish a through tariff on goods destined from Estevan, via Midale, to C.N.R. stations to which the companies have published and filed a through traffic from Weyburn, via Midale, it is ordered that, pending the extension and operation of the C.N.R. to Estevan, the C.P.R. publish and file a through freight tariff of class rates from Estevan, via Midale, to those points on the C.N.R. to which through class rates, via Midale, are published and filed by the C.P.R. from Weyburn, Sask., the said through rates from Estevan not to exceed the sums of the published and filed local rates of the C.P.R. to Midale and of the C.N.R. from Midale to the said Weyburn destinations; provided that, so long as Midale Transfer continues a non agency, the C.P.R. be permitted to consolidate less than carload shipments by holding them at Estevan until they approximate a carload of 20,000 lbs. in weight for transfer to the C.N.R. without breaking bulk, and that the said tariff be made effective not later than Nov. 20, 1913.

Week End Fares in British Columbia.

20686. Oct. 27. Re application of Port Hammond and District Improvement Association, Port Hammond, B.C., for an order requiring the C.P.R. to put into effect the same or similar week end fares from Port Hammond to the coast cities as are now in effect from Vancouver to Port Hammond, it is ordered that the application be refused.

Oxygen and Acetylene Gases Freight Rates.

20739. Nov. 4. Re application of L'Air Liquide Society of Montreal for an order reducing the less than carload rating of oxygen gas from the 2nd class of the Canadian Freight Classification to the 3rd class, and providing a carload rating of 5th class, it is ordered that the carload rating of 4th class provided in the Canadian Freight Classification for blaugas and carbonic acid gas be provided, also for oxygen and acetylene gases in carloads; that the application for a reduced less than carload rating of oxygen gas be refused.

Signal Installations on the Grand Trunk Railway.

The interlocking plant at St. Lambert, near Montreal, in connection with the new Southwark yard, was completed and put in service Nov. 12. It is an all electric plant, the signals being semaphore type, upper quadrant, top post mechanisms. This installation is said to be the largest electric power installation in Canada. The apparatus was supplied and installed by the General Railway Signal Co. of Canada.

A contract for automatic signalling on the Victoria Jubilee Bridge, Montreal, has been let to the Union Switch and Signal Co., This system will be the normally clear, alternating current, 3 position, upper quadrant semaphore type. Signals on the bridge will be supported by brackets specially designed. The signal layout and materials will represent the most modern practice of automatic signalling.

The Eastern Terminal Elevator Co., Ltd., has been incorporated under the Manitoba Companies Act, with $250,000 capital and offices at Winnipeg, to build, own and operate grain elevators, warehouses, etc., and to deal in grain and other products, and in connection therewith to operate wharves, docks, piers, etc. The provisional directors are, J. A. Richardson, A. C. Ruttan, H. Gauer, F. G. Davies, and D. J. McGillivray, Winnipeg.

Canadian Northern Town Properties Co., Ltd., is the name of a company allied with the Canadian Northern Ry., which has been incorporated under the Dominion Companies Act, with $10,000,000 capital, and offices at Toronto, to deal with townsite properties. The incorporators are all connected with the C. N. R. legal staff.

Powdered coal as a fuel has been used in a locomotive frame forging furnace, reducing the hourly consumption from 650 to 350 lbs., as well as heating 20% faster.

TENDERS.

TENDERS addressed to the undersigned, at Ottawa, and endorsed on the envelope "Tender for Steamer," will be received up to noon of the

EIGHTH DAY OF JANUARY, 1914,

for the construction of a Steel Twin Screw Ice-breaking Steamer of the following leading dimension:—

Length B.P.	275 feet	0 inches.
Breadth extreme	57 "	6 "
Draft Mean	10 "	0 "
Indicated Horse Power	8,000	

to be delivered at the King's Wharf in the City of Quebec.

Plans, tender forms and specifications of this steamer can be seen at the office of the Purchasing Agent of the Marine and Fisheries Department, Ottawa, at the offices of the Collectors of Customs, Toronto, Collingwood and Port Arthur, and at the Agencies of the Department of Marine and Fisheries at Montreal, Quebec, St. John, Halifax and Victoria, B.C.

All tenders must be made with the distinct understanding that the steamer must be built in Canada.

Plans, tender forms and specifications can be procured upon application from the Purchasing and Contract Agent, Ottawa.

The tender form is embodied in the specification.

Each tender must be accompanied by an accepted cheque on a chartered Bank equal to 10% of the whole amount of the tender, which cheque will be forfeited if the successful tenderer declines to enter into the contract prepared by the Department or fails to complete the steamer in accordance with the contract.

Cheques accompanying unsuccessful tenders will be returned.

The Department does not bind itself to accept the lowest or any tender.

Newspapers copying this advertisement without authority from the Department will not be paid.

ALEX. JOHNSTON,
Deputy Minister of Marine and Fisheries.

Dept., Marine and Fisheries,
—50306. Ottawa, October 25, 1913.

Railway Development

Projected Lines, Surveys, Construction, Betterments, Etc.

Alberta and Great Waterways Ry.—Surveys have been started on this line near Edmonton, Alta., the work being in charge of W. R. Smith, Chief Engineer, Edmonton, Dunvegan and British Columbia Ry., which is also being built by J. D. McArthur. Under the arrangements made with the old company, it is proposed to follow a portion of the route originally laid down, and to start construction on this early in 1914. The act of the Legislature came into operation by proclamation Oct. 31. (Nov., pg. 534.)

Alberta Proposals for Light Railways.—An act has been passed by the Alberta Legislature to encourage the building of light railways, connecting with existing lines, and open up territory in which there is not traffic to justify the building of ordinary lines. The Government is authorized to give a subsidy of $7,000 a mile in aid of such lines, which are not to exceed 75 miles in length. A section was inserted in the measure in its passage through the Legislature, limiting the total mileage which may be aided before the next session to 200 miles.

The first line to be built under this act will, it is said, be one from Bassano through the irrigated belt to Richmond, on Red Deer River. Grading is reported to have been started, and press reports state that the line will be completed in the spring. The press reports state that this line will be built by the Bassano and Bow River Ry. Co. The only company incorporated with anything like this title is the Bassano Electric Ry. Co., which was incorporated by the Alberta Legislature, Feb. 12, 1912, with power to build a line from Bassano southerly to Bow River; from Bassano northerly for 40 miles, and also within the town of Bassano. (See Oct., 1912, pg. 520.)

Athabasca Valley Ry.—The Alberta Legislature has extended the time for the building of the projected railway from Independence on the Edmonton, Dunvegan and British Columbia Ry., or from Edmonton to Fort Assiniboine, on the Athabasca River. The company was incorporated at the 1911-12 session of the Legislature, with J. D. McArthur, J. K. McLellan, R. A. Hazleton, D. W. Campbell and W. P. McDougall, all of Winnipeg, as provisional directors. (Jan., 1912, pg. 21.)

Burrard Inlet Tunnel and Bridge Co.—Sir Richard McBride, Premier of British Columbia, in an interview at Vancouver, B. C., on his return from London, Eng., Nov. 5, is reported to have said: "I met Sir John Wolfe Barry, engineer for the proposed Second Narrows bridge, and discussed the question of construction with him. I may announce that the provincial cabinet will discuss the proposal that the province take over the building of the Second Narrows bridge from the inter-municipal company of Vancouver within a short time." (Sept., pg. 432.

Calumet and Northern Ry.—The Quebec Legislature is being asked for an extension of time for the building of the projected railway from Calumet to St. Jovite, Que. Campbell, McMaster and Papineau, Montreal, solicitors for applicants. (Feb., pg. 83.)

Canada Coal Co. is the title of a company incorporated under the New Brunswick Companies Act, with a capital of $150,000 to acquire the interests of George Sergeant, Jr., formerly the proprietor of the Canadian Coal Corporation of New Brunswick. The company is authorized to build and operate railways, for the carriage of passengers and freight, and for this or any of the other purposes for which it is incorporated, may acquire shares or bonds of other companies. The company's offices are at Chipman, N. B., and the provisional directors are:—G. Sergeant, Jr., R. McClain, W. F. Williams, M. B. Davis, New York; W. G. Conklin, Ardsley, N. Y.

Canadian Alberta Ry.—Application is being made to the Dominion Parliament for the incorporation of a company with this title, to build a line from one mile west of Blairmore, Alta., on the C. P. R., northerly and westerly through townships eight and nine, range four west of the fifth meridian, for 14 miles to the centre of Sec. 20, tp. 9. Taylor, Harvey, Grant, Stockton and Smith, Vancouver, B. C., solicitors for applicants.

Canadian North Eastern Ry.—New York press reports state that arrangements are being made for the financing of construction of an extension of the existing line from Stewart to Bear Creek, 14 miles, to the Groundhog Mountains, and on to a junction of one of the Canadian Northern Ry. lines into Edmonton, Alta. The reports state that a large portion of the capital secured will be devoted to the opening up of coal mines on the Groundhog Mountain in order to provide traffic for the line. Sir Donald Mann, who is in his private capacity, the principal owner of the line, is said to be negotiating with the British Columbia Government for the purpose of securing the guarantee of an issue of bonds for construction purposes. In this connection it is stated that provision would be made for a line running to Dawson, Yukon, and that connection would be made with a line or lines from the International boundary line, to be built under U. S. auspices. The Premier of British Columbia in a recent speech suggested the possibility of provincial guarantees being given to a north and south line through British Columbia which would connect Alaska and the United States.

Another point in connection with this project is a report that arrangements are being made in London, Eng., for the organization of a company to develop large coal areas on Groundhog Mountain, and in connection with the project to build a railway from Stewart, B.C., to the collieries. (Oct., 1912, pg. 511.)

Cape Breton Coal, Iron and Ry. Co.—We are officially advised that grading has been in progress since Dec., 1912, on three miles of line extending from the present colliery line, which connects with the Sydney and Louisburg Ry. The new mileage starts one mile east of the colliery and extends to Round Island, Mira Bay, N.S. The contract provides for grading only. Lynch and Fane, Sydney, N. S., are the contractors. It is not contemplated to do anything further at present, owing to the fact that while the company had an assurance from the Dominion Government, that a breakwater would be erected to protect the proposed shipping pier at the terminus of the railway, nothing has yet been done. C. J. Coll, Broughton, N. S., is General Manager. (July, pg. 331.)

Central Canada Ry.—The Alberta Legislature has authorized the government to guarantee the company's bonds for $20,000 a mile for building a line from the Edmonton, Dunvegan and British Columbia Ry., for 100 miles. (April, pg. 168.)

Central Canada Ry.—The Dominion Parliament is being asked to incorporate a company with this title to build a railway from Winnipeg, northwesterly, via Yorkton, Saskatoon, and Battleford to Edmonton, Alta. Pringle and Guthrie, Ottawa, solicitors for applicants.

Chicago, Milwaukee and St. Paul Ry.—U. S. press reports state that that line, or its subsidiary, the Chicago, Milwaukee and Puget Sound Ry., has purchased the Graner ranch on the southwest corner of Sea Island, near Eburne, at the International boundary, that a number of other properties adjoining were purchased by the same interest recently, and that negotiations are being carried on for some properties on the Canadian mainland, just opposite. These purchases are said to be for the purpose of building a line to connect Seattle, Wash., and Vancouver, B. C. The company has an arrangement by which it can run over the Great Northern Ry. lines into Vancouver, and use the new terminals being laid out on False Creek. (Oct., pg. 470.)

Companie des Pouvoirs d'Eau de Valleyfield Limitee.—Application is being made to the Dominion Parliament for an act confirming the charter and letters patent of this company, and authorizing it among other things, to build a railway from Salaberry de Valleyfield southwesterly across Beauharnois and Huntingdon Counties to the International boundary; a line from Salaberry de Valleyfield southeasterly to the provincial boundary line in Huntingdon; and from Salaberry de Valleyfield northeasterly across the St. Lawrence River and through Soulanges and Vaudreuil Counties to the Lake of Two Mountains, and branch lines. Z. Boyer, Valleyfield, Que., Secretary.

Edmonton, Dunvegan and British Columbia Ry.—It is expected that track will be laid to the Athabasca River, 131 miles from Edmonton, Alta., early in December. A start has been made on the building of the bridge across the river at Mirror Landing, which it is expected to have completed early in the spring.

The Board of Railway Commissioners has approved of location plans for this line from mileage 1556.11 to 238.89, Alta. (Oct., pg. 475.)

Esquimalt and Nanaimo Ry.—It is reported that the work of constructing the bridges and trestles on the line between Victoria and Wellington, B. C., has been completed with the exception of the timber trestle at Arbutus Canyon, the material for which is being delivered. Ten miles of new steel have been laid at the north section, thus completing the replacing of the old 52 lb. with 60 lb. steel. R. Marpole, Vice President, completed a trip of inspection over the line, Nov. 7.

Steel has been laid on the Courtenay extension as far as the Little Qualicum River, a temporary bridge having been built across French Creek. The permanent steel trestle, which is one of the largest structures on the line, is being built by the Dominion Bridge Co. It is expected to have steel laid to the crossing of the Big Qualicum River by the end of the year. The grading from this point into Courtenay is well advanced. There are two large bridges on this section of the line, viz., at the crossing of the Tsable and Trent Rivers. It is expected, however, that the entire work will be completed so as to enable trains to be run into Courtenay by June 1, 1914.

The terminals being laid out on the Songhees Reserve, Victoria, consist of four substantial concrete and brick structures, erected at a cost of about $150,000 by E. R. Doe and Brother. The locomotive house will at present accommodate 10 locomotives, but it can be enlarged when required; the other buildings which will be used as machine, repair and car shops, are being equip-

[illegible] Welland, [illegible] as well as with some new plant. The buildings also comprise a 15,000 gal. oil tank, and a service tank for feeding the locomotives, which are fitted for burning oil instead of coal. (Sept., pg. [illegible])

Essex Terminal Ry.—We are officially advised that a contract [illegible] for the grading of an extension from the present terminus in Sandwich, Ont., southerly to the northerly limit of Ojibway, about a mile. Should the conditions continue favorable it is expected to have this portion of the railway open for traffic by January. Owen McKay, M. Can. Soc. C. E., Walkerville, Ont., is chief engineer. The contractor for the grading on the extension to Ojibway is J. J. Dewhurst, South Woodslee P. O., Ont. The company will do all the other work, with the exception of the building of a 16 ft. bridge, the construction of which has not yet been arranged. (Oct., pg. 475.)

Erie, London and Tillsonburg Ry.—According to statements credited to G.T.R. officials it appears that the surveys recently made by S. Wilson, and the visits made by representatives of the Canadian Stewart Co. to London, and points on Lake Erie south of London, were in the interests of that company. Mr. Wilson, in a recent interview, is reported to have stated that the surveys made show that a satisfactory route can not be obtained between London and Port Talbot, but that a 1.5% gradient can be got between London and Port Burwell. On this route only one bridge would be required.

The G.T.R. controls the charters of the E., L. and T. Ry., which was originally secured by J. H. Teall, Tillsonburg, Ont., who was formerly connected with the Tillsonburg, Lake Erie and Pacific Ry., now owned by the C.P.R. (See London to Port Talbot, Oct., page 475, and E.,L. and T. Ry., Dec., 1912, pg. 605.)

Fredericton and Grand Lake Coal and Ry. [illegible] service has been put in operation from Fredericton [illegible] Norton. [illegible] from Minto to Norton is that formerly operated by the New Brunswick Government, under the charters of the New Brunswick Coal and Ry. Co., and the Central Ry. of New Brunswick. (Sept., pg. [illegible])

Glengarry and Stormont Ry.—A meeting of the shareholders has been called to be held at Montreal, Dec. 1, to authorize an issue of first mortgage, [illegible] gold bonds, for $750,000, to provide for the construction of the projected line from Polycarp, on the C. P. R., to Cornwall, Ont. W. J. [illegible], Montreal, is Secretary.

The Board of Railway Commissioners has approved of location plans for this projected railway. Mileage 0 to 24.05. (July, pg. 331.)

Ha Ha Bay Ry.—Application is being made to the Quebec Legislature to extend the time [illegible] authorized by Chap. 107 of the Statutes of 1908 may be built. [illegible] Roberval and Saguenay Ry.)

Kettle Valley Lines.—[illegible]

the line from Coldwater summit to Osprey lake, which it is said will save a long detour and open up some new territory. Track has been laid for seven miles westerly from Penticton, and a considerable mileage of grading has been done.

Grading has been started out of Hope, on the section towards the Coquihalla summit, the men being spread over the first six miles. The right of way is being cleared beyond that point, and good progress has been made with cutting out the supply road.

In an interview at Vancouver, Nov. 10, it was stated that the bridge to be built across the Fraser River will be 1,000 ft. long and will cost about $1,000,000.

We are officially advised that while the line is leased to the C.P.R., it will not be taken over by that company until construction is completed. (Oct., pg. 475.)

Lake Erie and Northern Ry.—The terminal facilities for this line in Galt, Ont., are being laid out, with a view of having everything ready for the opening of the section from Brantford, early next spring. The buildings consist of a brick station, and freight house, and six tracks are being laid in the yard. About 14 miles of grading has been completed between Brantford and Galt, some miles of steel have been laid, and a ballasting gang is working from the Galt end.

Considerable progress has been made in Brantford, where some heavy work is being done at Jubilee Terrace and Lorne Bridge. The bridge is to be raised seven feet. A good deal of the trstle work through the city has been completed.

Good progress is being made with construction on the line from Brantford to Port Dover. The Board of Railway Commissioners, Oct. 10, granted the company the right to use the G. T. R. harbor at Port Dover. (Oct., pg. 475.)

A contract was entered into, Nov. 8, between the Dominion Government and the company, under the provisions of the act granting aid to certain railways, for the building of a line from Galt to Port Dover, Ont., not exceeding 58 miles.

Magdalen River Valley Ry.—The Quebec Legislature is being asked for an extension of time for the building of this projected railway from Magdalen River Roman Catholic Church to a junction with the inland section of the Atlantic, Quebec and Western Ry. F. Murphy, Quebec, is solicitor for the company. (May, 1908, pg. [illegible])

Midland Continental Ry.—Press reports state about 40 miles of line between Wimbledon and Jamestown, N.D., have been completed and put in operation, and that surveys have been made for an extension from Wimbledon to Grand Forks, Minn. It is said that further construction will be undertaken in the spring. The object of the company is said to be to secure a through line from Winnipeg, Man., to the Gulf of Mexico. (June, 1912, pg. 301.)

Moncton and Northumberland Strait Ry.—The Board of Railway Commissioners has approved of location plans for a line from Richibucto to Buctouche, N.B., 19 miles. The M. and N. S. Ry. is the new title of the Buctouche Ry. and Transportation Co., which took over the old Buctouche and Moncton Ry., or as it was often called the Moncton and Buctouche Ry. (See Buctouche Ry. and Transportation Co., Aug., pg. [illegible])

Norton to St. John, N. B.—Press reports state that surveys have been made for a railway from Norton, through Salt Springs, [illegible] Village and Loch Lomond to St. John, N. B. The report further states that C. P. R. engineers have been over the route, and have been looking into the traffic possibilities. The C. P. R. by the leasing of the Fredericton and Grand Lake Ry., and the New Brunswick Coal and Ry. Co.'s line, has a line to Norton, and this proposed line would provide it with an entrance into St. John, on the east.

Ontario Lake Front Terminal Ry.—Application is being made to the Dominion Parliament for the incorporation of a company with this title to build a line from between Havelock and Central Ontario Jct., on the C. P. R., southeasterly via Campbellford to Cobourg, and from near Campbellford to Brighton, Ont. C. Pringle, Ottawa, solicitor or for applicants.

Regina to Saskatoon, Sask.—The Saskatchewan Legislature is being asked to incorporate a company to build a railway from Regina to Saskatoon. Anderson, Bagshaw and Amyott, Regina, solicitors for applicants.

P. M. Anderson, in an interview, Nov. 5, is reported to have stated that the company will be named the Central Saskatchewan Ry. Co., and that in addition to the line to Saskatoon, it is proposed to ask for power to build lines from Regina to Prince Albert, thence northeasterly to the Saskatchewan-Manitoba boundary, and from Regina easterly to the Saskatchewan-Manitoba boundary, and that the interests behind the project are prepared to spend large sume in order to develop the lines.

Ottawa and Ungava Ry.—The Dominion Parliament is being asked to extend the time within which the company may build the line authorized by Chap. 102 of the Statutes of 1909-10, and Chap. 94 of the Statutes of 1912, and for power to build a line eastward from the main line north of the 49th circle of latitude, by the most feasible route and crossing the Ashwapmuchuan, Mistassini, Peribonka, Bersimis, Outarde, Manicuagan, Pentecote, Ste. Marguerite, Moisie, Romaine, Natashkwan Rivers, to Lake Melville, or to the boundary between the province of Quebec and Labrador in the vicinity of St. Lewis Inlet or of St. Charles River, with spurs northward and southward. A. T. Genest, Ottawa, is Managing Director. The company was incorporated in 1909-10 as the Gatineau and Ungava Ry., but its name was changed as above in 1912. (June, 1912, pg. 300.)

Owen Sound to Meaford.—A deputation from Owen Sound and Meaford, Ont., waited on the Provincial Government recently to urge the granting of aid for the building of a railway to connect these two towns. Consideration was promised. There have been several attempts made within the past ten years to secure the building of this line; two or three charters have been granted, and Dominion aid has been voted, but beyond surveys nothing has been done.

Prince Edward Island Ry.—Press reports state that construction of a spur line to Carleton Point, where the car ferry terminal will be situated, has been practically completed. The line is about 2.5 miles long, and runs on a tangent from the Cape Traverse branch. The cuttings and fills have been built for standard gauge. As soon as completed the line will be used for taking in material for the construction of the terminals. Roger Miller, representing the contractors for terminals, and — Downing, engineer in charge of construction of the spur line, inspected the work, Nov. 14. (Oct., pg. 475.)

Pacific Great Eastern Ry.—D'Arcy Tate, Vice Pesident, stated in Vancouver, Nov. 8, that grading was finished between Dundarave and North Vancouver, and that track was being laid. It was expected that a suburban train service will be put on this section of the line early in the next year.

Considerable progress has been made

with construction on the line along the Squamish Valley, beyond the point to which track was laid on the old Howe Sound and Northern Ry. It is expected that a train service will be put on this section at the beginning of 1914.

Squamish Indian Reserve at Newport, B. C., has been acquired by the P. G. E. Ry. The reserve contains 988 acres, of which 40 are reserved by the tribe and each member of the tribe is to receive a 50 ft. lot. The price paid is $150,000 for the land and $5,000 for the timber. The land is to be used for terminal and townsite purposes. (Oct., pg. 475.)

Pacific, Peace River and Athabasca Ry.—Application is being made to the Dominion Parliament for the incorporation of a company with this title to build a railway from the mouth of the Naas River on the Pacific Coast, B. C., easterly 225 miles to the height of land between the Naas and Skeena Watersheds, thence to the North Tacla Lake, through Hogan Pass to the Omineca River, and the Findlay branch of the Peace River, along the Peace River to the Athabasca River, and Fort McMurray, thence to Prince Albert, Sask., a total distance of 1,500 miles. Pringle, Thompson, Burgess and Cote, Ottawa, solicitors for applicants.

Peace River Tramway and Navigation Co.—Application is being made to the Dominion Parliament for the incorporation of a company with this title, to build a railway from Smith's Landing on Peace River, to Fort Smith on the northern boundary of Alberta; a line from Vermillion Rapids easterly along the northern bank of the Peace River to Vermillion Falls, with branch lines, and to operate steamships on the Peace, Slave and Mackenzie Rivers. Pringle, Thompson, Burgess and Cote, Ottawa, solicitors for applicants.

Quebec Central Ry.—The work of locating the route for the projected extension from St. Sabine to St. Pamphile, Que., of which F. H. Burpee, has been in charge, has been completed for the season. The final location of the 25 miles from St. Sabine to English Lake, has been completed, and grading has been done on the first ten miles. P. J. Wolfe, Sherbrooke, Que., having the contract. Track is reported to have been laid to St. Camile, five miles from St. Sabine, on the extension, and a train service is expected to be put in operation on it by the end of the year. (Dec., 1912, pg. 605.)

Quinze and Blanche River Ry.—Application is being made to the Dominion Parliament for an extension of time for the building of the lines authorized by Chap. 123 of the Statutes of 1906-07, and by Chap. 127 of the Statutes of 1908-09. Orde, Powell and Lyle, Ottawa, solicitors for applicants. (July, 1909, pg. 481.)

Roberval and Saguenay Ry.—The Quebec Legislature is being asked to extend the time for the building of the lines already authorized; to authorize the building of a line of 250 miles from the Ha Ha Bay Ry. to the St. Maurice River or one of its tributaries, and to continue and complete the branches of any railway the lines of which may have been acquired. Lapointe and Langlois, Chicoutimi, Que., solicitors for applicants. (Dec., 1912, pg. 605. See also Ha Ha Bay Ry.)

St. John and Quebec Ry.—We are officially advised that considerable progress has been made with construction on the 120 miles, between Gagetown and Centreville, N. B., for which contract was let in May, 1912. The grading, which in many places north of Fredericton, and immediately north of Woodstock, was very heavy, is about completed. Track laying is under way north and south from Fredericton, and north and south of Woodstock; about 45 miles of steel has been laid, and about 30 miles of ballasting has been completed. It is expected to complete the ballasting between Fredericton and Gagetown, 33 miles, and between Woodstock and Centreville, 27 miles, before winter. Track laying will be continued until the whole 120 miles have been laid. Station buildings are being constructed, and the Dominion Bridge Co. will begin the erection of the steel superstructures of the bridges shortly.

Final location plans have been approved for a further 23 miles, south of Gagetown to the Kings County line, and a contract for its construction has been let, we are advised, to Jas. H. Corbett and Sons, Que., which firm will start work immediately. It is expected the final location plans for the line from Centreville to Andover, 26 miles, will be approved at an early date, and a contract for grading will be let immediately thereafter. The location of the line from the Kings County line into St. John, has not been decided. (Oct., pg. 476.)

Sudbury, Kepawa and Bell River Ry.—Application is being made to the Dominion Parliament for the incorporation of a company with this title, to build a railway from Sudbury, Ont., to the south end of Lake Timiskaming, thence north easterly to a junction with the National Transcontinental Ry. at the crossing of Bell River, Que. Jno. Thompson, Ottawa, solicitor for applicants.

Timiskaming and Northern Ontario Ry.—We are officially advised that the question of the electrification of the several branch lines has been under consideration for some time, and it has been decided to proceed with the work on the Kerr Lake branch next spring. This branch extends from Cobalt to Kerr Lake, 3.9 miles. Engineers are making a thorough investigation of the other branch lines with a view to their electrification. (Oct., pg. 470.)

Toronto, Hamilton and Buffalo Ry.—The second track from Welland to Fenwick Station, Ont., about 6.50 miles, has been completed and is now being operated. The last section to be passed by the Board of Railway Commissioners for operation extends from Welland to Welland River, mileage 0.49 to 1.35. (Oct., pg. 476.)

Ungava Ry.—Application is being made to the Dominion Parliament for the incorporation of a company with this title, to build a railway from the Hudson's Bay Co.'s post at the mouth of Great Whale River, or between the Great Whale River and the Nastasoka River, on the eastern coast of Hudson Bay, easterly and south easterly to Aylmer Sound, or some other convenient point on the Gulf of St. Lawrence between the 50th and 51st parallels of north latitude. Pentland, Stuart, Gravel and Thomson, Quebec, solicitors for applicants.

Victoria, B. C. The City Council recently received tenders for the supply of 555 gross tons of 20 lb. steel, in 20 ft. lengths, together with the necessary splice bars, bolts and track spikes for 10.700 miles of line. The city is to lay eight miles of single track to Goldstream; 1 1-8 miles to Fitzgerald, and 8 2-3 miles to Cooper Cove wharf, in connection with certain works about to be undertaken.

Welland Canal Construction Railway.—In connection with the railway being built for the getting in of supplies for the construction of the new Welland ship canal, we are advised that a contract has been let by the Dominion Government to The Hamilton Bridge Works, for the erection of a double track swing bridge across the canal near lock 11. The bridge will be 170 ft. long over all, calculated to carry heavy railway traffic. It will be somewhat similar in design to the double track bridge on the G. T. R. main line where it crosses the old canal, a short distance east of Merritton, Ont. The contract covers the furnishing and erection of the steel work, at an estimated cost of $65,800.

Winnipeg, Man.—The Winnipeg City Council has given a general notice that it will invite tenders early in 1914 for the works necessary for the delivery of water from Shoal Lake to the Greater Winnipeg water district, at an estimated cost of $13,500,000. The works include the construction of 85 miles of railway, the estimated cost of which is $12,000 a mile, or $1,020,000. The cost of rolling stock is included in the general cost of the works. Location and profile plans and other particulars may be obtained of M. Peterson, Winnipeg, acting Secretary of the Administration Board of the Greater Winnipeg Water District.

The railway will follow the right of way of the pipe line for the water supply, and will be used entirely for construction purposes. The line will cross the Canadian Northern Ry. between Winnipeg and Nairn, and will proceed easterly, bearing southerly, passing by Plympton, Meadowvale, Monomento, north of Old Lake and crossing the Whitmouth, Boreli and Brokenhead Rivers, to Indian Bay, an inlet of Shoal Lake, which itself is an inlet of the Lake of the Woods. Four survey parties are reported to be in the field completing the location of the route. One of the largest structures will be the viaduct across the Brokenhead River Valley. (Oct., pg. 476.)

Papers on Steel Frame and Steel Underframe Box Cars.

In connection with the American Society of Mechanical Engineers' annual meeting, to be held in New York Dec. 2 to 5, there will be a railway session on Dec. 3. Two papers will be presented, one on steel frame box cars, by R. W. Burnett, General Master Car Builder, Canadian Pacific Ry., and one on steel underframe box cars, by G. W. Rink, Mechanical Engineer, Central Rd. of New Jersey.

Mr. Burnett, in his paper on steel frame box cars, will consider the development of this type of car and outline some of the factors which have been responsible for it. The practice on the C.P.R., particularly in reference to the repairs, and the advantages of this type of car, will be considered and special attention will be directed to the methods of selecting and treating the lumber for the sheathing and lining.

Mr. Rink will present tables showing the practice of a number of roads regarding the dimensions of various parts of box cars. These tables were prepared with a view to making it possible to select a design which would render the best practice. Mr. Rink believes that further steps should be taken toward adopting standards for use on the box cars of the railways generally, and suggests that a committee representing the different roads should be appointed to develop a standard box car.

This is the first time that the merits of these two types of cars will have been discussed so thoroughly by a technical association. Both of the papers will cover the subjects which they deal with comprehensively. A number of railway officers have been invited to participate in the discussion, and it is expected that much good material will be brought out.

J. A. M. Faulds, Manager Railway and Steamship Department, D. E. Brown, Hope & MacCauley, Ltd., Vancouver, B.C., writes: "I think Canadian Railway and Marine World is an excellent work. It should be read by every man in the railway and steamship business."

The Canadian Pacific Railway's New Bridge Across the St. Lawrence at Lachine.

The bridge which the C.P.R. has built across the St. Lawrence River at Lachine, Que., to replace the single track structure that was built in 1886, is shown in the accompanying illustration. The original bridge had 17 spans from the Lachine end, as follows: 3 shore girders 80 ft. long and 7 ft. deep; 8 river spans 240 ft. long and 35 ft. deep; flanking span 270 ft. long; 2 cantilever spans 407 ft. long; flanking span 270 ft. long; and 1 girder span 240 ft. long and 35 ft. deep. While this bridge was of sufficient strength to handle light traffic, it was rapidly approaching the day when the heavy rolling stock would tax it to a point that was considered unsafe for modern conditions. This, in spite of the fact that the bridge when built was considered one of the engineering marvels of the time. The spans of the old bridge have been used in the new bridge built by the company at Outlook, Sask., which was described in Canadian Railway and Marine World for June, 1913.

Since its inception, the constantly increasing size of rolling stock and the rapid development in the volume of traffic to be handled, made it imperative that the Lachine bridge be not only rebuilt, but also double tracked. The new bridge, descriptions of which have appeared in Canadian Railway and Marine World for Feb. and Aug., 1912, contains steel spans as follows: six 80 ft. long; sixteen 120 ft.; four 270 ft.; two 122 ft.; eight 240 ft.; four 270 ft.; and four 480 ft., making the total length of the bridge in spans 3,138 ft. The new design is entirely different from the former construction, the latter comprising long light spans, while all the new spans are heavier and shallower, following more modern practice. To reduce the length of the old spans to make possible the use of shallow girders, the four old 240 ft. spans have been replaced by eight 120 ft. spans, these all being on the Lachine end. The double tracking of the new structure made possible the simplification of the work of maintaining the traffic without interruption, the old bridge being retained in portions while the new spans have been put in place alongside. The presence of the old spans also facilitated the actual work of construction.

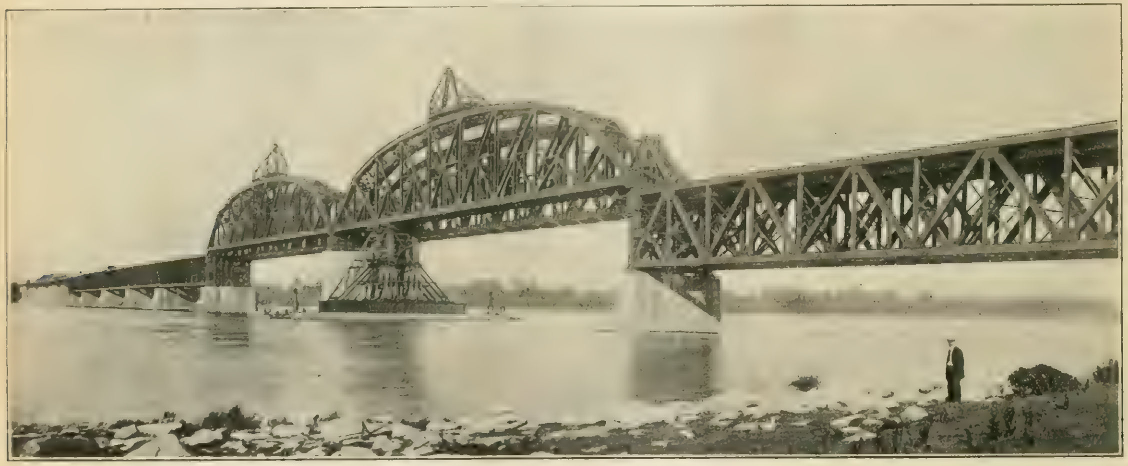
In the new bridge there are 28,072,252 lbs. of steel. The 80 ft. lengths run to 110,000 lbs.; the 120's, 226,000 lbs.; the 240's, 960,000 lbs.; the 270's, 1,324,138 lbs.; and the 408's, 2,600,000 lbs.

The C.P.R. is carrying out this work at a cost of about $3,000,000 in pursuance of its policy of ultimately double tracking the whole of its main transcontinental line. This bridge is on the line between Montreal and St. John, N.B., and is a few miles southwest of Montreal. The necessity of double-tracking this unit in preference to some other portions is accounted for by the joint use of this section of the line from Montreal to Adirondack Jct., which is just south of the river, by the New York Central Lines entering Montreal, which also handle a heavy traffic.

This work was carried on under the direction of P. B. Motley, M. Can. Soc. C.E., Engineer of Bridges, with J. H. Barber, M. Can. Soc. C.E., in charge of the erection.

The bridge was officially completed Nov. 4, when D. McNicoll, Vice President, tightened up the last bolt in the track and officially opened the bridge for traffic in the presence of Phelps Johnson, Vice President Dominion Bridge Company; G. H. Duggan, General Manager Dominion Bridge Company; A. D. MacTier, General Manager Eastern Lines C.P.R.; P. B. Motley, Engineer of Bridges C.P.R.; H. H. Vaughan, Assistant to Vice President C.P.R.; J. M. R. Fairbairn, Assistant Chief Engineer Eastern Lines C.P.R.; J. K. McNeillie, Superintendent Montreal Terminals C.P.R.; W. Cowie, Chief Engineer Montreal Harbor Commission; S. P. Brown, Chief Engineer Mount Royal Tunnel; C. N. Monserrat, Chairman Quebec Bridge Commission; and G. Hodge, General Superintendent Eastern Lines C.P.R.

At a luncheon given subsequently at the Mount Royal Club, P. B. Motley, Engineer of Bridges, C.P.R., said that it had taken three years to build the bridge. There are really two bridges, each of single track, and by well considered methods the structure was erected in sections, traffic being shifted from up stream to down stream until the bridge was finished clean across the river. By June, 1910, the steel and masonry was going on together, and the first half of the bridge was completed between June, 1910, and March, 1912. Last spring, after desultory work during the winter, the old spans that remained were taken down and the last of the channel spans installed. Between April 21 and October 21, the last five old spans —two 270 ft., two 408 ft., and one 120 ft.— were taken out and five new spans of similar length erected, this work being accomplished in six months, which is said to be a record time for the moving of four thousand tons of steel, during which traffic was passing all the time. In connection with the work 3,500,000 rivets were used. Only two men lost their lives during the work. One fell off a scow into the river and could not swim, and another fell off a locomotive derrick in the yard. Mr. Motley complimented the Caughnawaga men on the part they had taken in the work. The bridge is five eighths of a mile long as against the Victoria bridge of two miles and a half. The floating in of the third and fourth channel spans was accomplished in record time. The third took 22½ minutes actual time, while the fourth was placed into position in 15 minutes, which was certainly a remarkable achievement, and he congratulated the Dominion Bridge Co. on the excellent work. It required 3,450 cars to handle the material used for the bridge.



The Canadian Pacific Railway Bridge at Lachine, Que.

Construction Camps in Selkirk Mountains.—Canadian Railway and Marine World for November contained an illustrated description of the model construction camp being erected by Foley, Welch and Stewart, at Glacier, B.C., for their employes on the tunnel which they are boring for the C.P.R. at Rogers Pass. We are advised that another model camp is under construction at the other portal of the tunnel. The camps are identical, except that the one at Glacier is being equipped with offices, etc., for all business connected with the tunnel construction. Both camps are rapidly approaching completion.

Railway Lands Patented.—Letters patent were issued during September in respect of railway lands in Manitoba, Saskatchewan, Alberta and British Columbia, as follows:—

	Acres.
Canadian Northern Alberta Ry.	560.15
Canadian Northern Ry.	1,186.67
Canadian Pacific Ry. grants	469.30
Canadian Pacific Ry. roadbed and station grounds	12.09
Grand Trunk Pacific Ry	286.02
Grand Trunk Pacific Branch Lines Co...	16.58
Qu'Appelle, Long Lake and Saskatchewan Rd and Steamboat Co	3,574.56
Total	6,105.37

Canadian Pacific Railway Construction, Betterments, Etc.

Eastern Division.—The C.P.R., we are officially advised, has signed the agreements with the city which will enable progress to be made with the laying out of new terminals in Quebec, which will be utilized by all railways entering the city. The signature of the Minister of Railways has also been appended to the document, thus completing a matter which has been the subject of negotiation for some years.

Plans and book of reference for a revision of location of the line at Delari, Bolton tp., have been deposited in the office of the Supreme Court for the district of Bedford, Que.

We are officially advised that a contract has been let to John S. Metcalf Co., Montreal, for the extension of the Glen Arch, Westmount, Que., to provide for a width of four tracks. The estimated cost is $50,000.

The new Lachine bridge was completed and opened for traffic Nov 4.

Ontario Division.—The second track work east of Toronto is intended to extend from near Agincourt, when the new Campbellford, Lake Ontario and Western Ry., from Glen Tay, makes a connection into Toronto. The line from Montreal is double track to Glen Tay, and from this point to near Agincourt, there will be two single track lines—the original main line through Peterboro, and the new line to Belleville, and along the lake front. Thence into Toronto. We are officially advised there is no present intention of any further second track work on the Montreal-Toronto line.

Considerable progress has been made with the viaduct in North Toronto, which has been under construction for over a year. It will extend from east of Yonge St., to west of Dufferin St., and will have accommodation for five tracks. It will be used by the C.P.R. and the Canadian Northern Ry., and is expected to be completed during 1914. A station is to be built at North Toronto for the joint use of the two lines, as a part of the project.

The new second track from west of Islington was put in operation as far as Erindale, about 11 miles, Nov. 2. It is expected that it will be completed to Streetsville Jct., Dec. 1, and the remaining mileage to Guelph Jct., by Dec. 31. The only thing likely to delay it is the steel work for the bridges. Press reports state that the second track work will be continued through from Guelph Jct. to London, in 1914, and that a line will be built from near Guelph Jct. to connect with the Sudbury line at Bolton Jct. In connection with the first of these reports it is stated that negotiations are in progress for the purchase of considerable land at Woodstock, with a view of increasing the yard accommodation and adding to the terminal facilities there.

A down-town yard has been laid out on Main St., Galt. Eight tracks have been laid, and a freight shed and offices built.

Owen Sound press reports, Nov. 14, state that a project has been under consideration for the building of a line from Owen Sound, via Meaford and Collingwood to Orillia. A gang of men started work at Collingwood, Nov. 8, and local reports state that they are engaged on the preliminary work for the line from Collingwood to near Baxter, on the Sudbury line. This line is what is known as the Collingwood Southern Ry., the charter for which is held by the C.P.R., and surveys for which were made by H. D. Lumsden.

Lake Superior Division.—The bridge over Current River, east of Port Arthur, Ont., was finished Nov. 10, completing the final link on the second track work, easterly to Navilus. East of this it is proposed to build a division in order to secure a better gradient for the double track. Preliminary surveys have been made, and the final location survey is now being made.

Manitoba Division.—The new bridge across the McKellar River, Fort William, Ont., connecting Island one and two, was opened for traffic Oct. 30. Trains are being operated to the new coal dock and the new freight docks.

Plans have been approved by the Winnipeg City Council for alterations to be made at Main St. subway. The level is to be raised so as to make the approaches easier, and the superstructure is to be widened to allow the laying of two additional tracks.

The Board of Railway Commissioners has authorized the opening for traffic of the second track from Kemnay, mileage 8.2, to Griswold, mileage 24.8, Broadview subdivision.

Saskatchewan Division.—The Board of Railway Commissioners has authorized the operation of trains over the second track on the Broadview subdivision, from mileage 25.5 to 28; on the Moose Jaw subdivision from Pilot Butte, mileage 84.7 to Regina, mileage 92, and on the Swift Current subdivision from Ernfold, to mileage 70. The second track is reported to be in operation to Hebert, 81 miles west of Moose Jaw. It is expected that the grading for the second track will be completed as far east as Broadview by Dec. 31. Second track is expected to be laid for six miles east of Swift Current by Dec. 31, which will leave about 12 miles to complete the work to Hebert.

The extension of the line from Swift Current northwesterly, from Cabri to Prussia about 54 miles was put under the operating department, Oct. 28. A route map has been filed with the Department of Railways, for a revision of route in the vicinity of Empress, at the Saskatchewan-Alberta boundary.

The Weyburn line is being operated as far as Assiniboia, 111.4 miles, and it is expected that track will be laid to Shaunavon, a further distance of 118.6 miles, by Dec. 31. This will bring the line to the Saskatchewan-Alberta boundary, near where the section being built easterly from Stirling will be met.

Alberta Division.—The new double track bridge over the Saskatchewan River at Medicine Hat, Alta., has been completed. It is said to weigh about 2,300 tons, and to have cost about $400,000. Construction was started in the spring, and has been carried on continuously, traffic not having been delayed more than eight minutes at any one time.

The Board of Railway Commissioners has authorized the opening for traffic of the branch line under construction from Stirling, to meet the line running westerly from Weyburn, from Stirling to mileage 49.2. It was expected to have track laid to Foremost, Nov. 30. Grading is progressing to the Alberta-Saskatchewan boundary. It is proposed to establish a divisional point on sec. 24, tp. 5, range 6, at mileage 110, and 40 miles east of Foremost.

The Board of Railway Commissioners has authorized the operation of trains over the extension of the Lacombe branch of the Calgary and Edmonton Ry. to Monitor. The line is to connect at Kerrobert with the line from Moose Jaw northwesterly.

At the annual meeting of shareholders the directors were authorized to construct a line from near Swift Current, Sask., on the main line, via Coronation, to Sedgewick, Alta., west of Hardisty, on the Calgary and Edmonton Ry., at Wetaskiwin, 290 miles, and for the completion of the line from Weyburn, westerly to Stirling, which will have a total length of 436 miles, in Saskatchewan and Alberta.

Pacific Division.—The Kootenay Central Ry. is in operation 40 miles from Golden to Spallumcheen, and for some miles northerly from Fort Steele, B.C. Between these points construction has been in progress all summer. It was recently reported that on the 143.5 miles between Golden and Fort Steele, 63.5 miles of track had been laid, and that practically all the grading had been completed.

The three track bridge over the Coquitlam River was reported recently to be practically completed. A three track bridge is under construction across the Pitt River near the same place, and when this has been put up, the second track work east of Vancouver to Mission City will have been completed. The second track work from Mission City to Ruby Creek is practically complete.

Considerable progress is reported to have been made with the erection of the steel work on the new passenger station at Vancouver. The mason work is also being progressed with, and it is expected that the eastern portion of the building will be ready for occupation by February. The raising of the passenger tracks to the level of the new station, five feet above the present height, is being carried out. (Oct., pg. 480.)

Applications to Parliament.—The C.P.R. and a number of its subsidiary companies have given notice of applications to be made to the Dominion Parliament at the next session for power to build certain lines and for extensions of time within which to build lines already authorized. Full particulars of the various applications are given in the several companies official notices on pg. 602 of the reading matter section, and on pg. 36 of the advertising section of this issue.

Grand Trunk Railway Port Huron Shops Destroyed by Fire.

A press report from Port Huron, Mich., Nov. 26, states that block one of the G.T.R. car shops there was destroyed by fire that morning, the fire starting from an unknown source, and gaining rapid headway, due to lack of water, the pumps having been shut down to repair a water main. The buildings reported to have been burned include the main building, 800 ft. long, which contained the general offices, stores department, machine shop, passenger car shop, draughting and record rooms, paint shop and upholstery shop. Most of these departments were at the general office end of the building, with the machine shop next, and the passenger car shop occupying the whole of the other end of the shop.

In the different shops there are said to have been 14 passenger cars and 50 freight cars, which were totally destroyed, adding to the general loss. The 586 men on the pay roll will be temporarily out of employment. New electrical equipment for the power house was to have been installed shortly, but fortunately had not been delivered. A dispatch credits G.T.R. officials there with stating that the plant will be immediately rebuilt. Damage to the extent of about $50,000, caused by the recent heavy storms on the Great Lakes, was done to the plant, which is located directly at the mouth of the St. Clair River, and repairs were nearly completed prior to the fire.

The Canadian Northern Ex. Co. has opened offices at Inwood, Man.; Dinsmore and Elrose, Sask., and Hanna, Olyen and Youngstown, Alta.

National Transcontinental Railway Construction.

A press dispatch from Cochrane, Ont., Nov. 17, states that the last section of track has been laid easterly from that point, connecting with the track laid westerly from Quebec, thus completing track laying on the entire line of the N.T.R. from Moncton to Winnipeg, 1804 miles. The last of the steel was laid near Nellie Lake, about 15 miles east of Sunday River, and about 200 miles east of Cochrane. This does not mean that the line is completed, for the bridge work is yet to be finished and the ballasting, etc., to be done. The most important bridge work yet to be done is the building of the bridge across the Megiskan River valley, about 190 miles east of Cochrane. This bridge will be 500 ft. long. The abutments are in place and the steel will be put in position during the winter. The valley is at present spanned by a temporary trestle.

West of Cochrane the line is reported to be in excellent shape as far as Superior Jct., whence the G.T. Pacific Ry. branch line is in operation to Fort William. The trestle work on this section is now reported to be filled in and the bridge work practically completed. It is expected that the entire line will be ready for operation by the end of next summer.

Work is being proceeded with on the car ferry slips at Quebec and Levis, Que., and these are expected to be ready about the same time.

The section of the line from Cap Rouge, Que., for 50 miles west, was finally completed Oct. 30, and is ready for traffic. The section from Levis to the boundary of New Brunswick is expected to be finally completed in July. G. Grant, Chief Engineer, completed a trip of inspection over the section south of the St. Lawrence River to the New Brunswick boundary, Nov. 9. The contract on both these sections has been carried out by M. P. and J. T. Davis.

In connection with the terminal plans at Quebec a terminal is to be built from Lampson's cove to St. Malo, near the site of the shops. This tunnel will obviate the original plan of building a line along the already congested water front.

Tenders will be received by the Commissioners to Nov. 4 for the installation of an electric wiring system for the car shops at Transcona, Man. (Oct., pg. 479.)

Grand Trunk Pacific Railway Construction.

Collingwood Schreiber, General Consulting Engineer for the Dominion Government, completed an inspection of the line, Nov. 5, and in an interview at Winnipeg, is reported to have stated that from the present stage of progress he is of opinion that grading will be completed by the end of April, and that track laying will be completed, by the gangs working westerly and easterly, in the vicinity of Fort Fraser, B.C., by the end of next summer.

Press dispatches, Nov 12, state that it is expected that steel will be laid westerly into Fort George, B.C., early in December. A train service is being operated to Kidd, about 411 miles west of Edmonton, Alta., and it is expected that this will be extended into Fort George early in 1914. On the construction work coming east a train service is being operated from Prince Rupert to mileage 301, just east of Rose Lake, B.C., by the contractors, and the company is operating a regular train service to Smithers, 227 miles east of Prince Rupert. At Smithers, which is the divisional point between Prince Rupert and Fort George, a contract has been let for the laying out of the yard, which will necessitate the shifting of about 30,000 cubic yards of earth.

Grand Trunk Pacific Branch Lines.

The Board of Railway Commissioners has authorized the building of a double track branch from the main line at Empire Ave., Fort William, Ont., northward along what was formerly known as James St., and easterly along the city limits to Thunder Bay. The spur will be three miles long and will open up and serve a large industrial area as well as give the company access to the new government elevator.

The Board of Railway Commissioners has authorized the point of junction of the Brandon branch with the main line at Harte, Man., and a slight change in the location, about half a mile, on the line at the Brandon end. Construction is being carried on at the bridge at Brandon, but the grading is being held up owing to some right of way difficulties, which it is hoped to clear out of the way by Dec. 31.

The branch line from Regina to the International boundary, Sask., was opened for traffic, Nov. 10. Connection is made at Northgate, the boundary station, with the Great Northern Ry. branch from Niobe, N. D. The plans for the company's station at Regina have been submitted to the city council for approval. The estimated cost of the building, which will include a power house, laundry and train shed, is $1,000,000. It will have a ground area of about 8,000 square feet, at the corner of Albert St. and Sixteenth Ave., about half a block from the hotel. The building will be two stories high, the upper story being devoted to the company's divisional offices. Ross and McDonald are the architects.

An order was made, Nov. 4, by the Board of Railway Commissioners for the provision of temporary terminal facilities in Moose Jaw, Sask. Work was started, Nov. 11, on a short spur track, and the grading of land south of the track east of Main St., to provide the necessary facilities. It is said that negotiations are in progress with the Canadian Northern Ry. for the provision of a union station in the city. The Board of Railway Commissioners has authorized the opening for traffic of the line from Moose Jaw north westerly to Maver, Sask., 47.3 miles.

Surveys have recently been made to locate a site for the bridge across the South Saskatchewan River, over which the company's line from Young will enter Prince Albert, Sask. It was expected that track laying on the branch would be completed to the southern bank of the river by Nov. 30.

The Cutknife branch, extending from Battleford to Rossman, Sask., 33.6 miles, has been opened for traffic.

A train service has been put in operation over the Biggar-Calgary branch, as far as Loverna, 105 miles from Biggar, Sask. This branch will ultimately be extended to a junction with the Tofield-Calgary line in Alberta.

The Alberta Legislature has increased the guarantee voted in 1909 for the building of the line from Tofield to Calgary, from $13,000 to $15,000 a mile. No alteration has been made in the conditions upon which the guarantee was made. A train service has been in operation into Calgary since Sept. 29, a temporary station having been provided west of Twelfth St. East. The line has not been finally completed between Irricana and Calgary, but it is expected that the finishing up will be completed by the end of the year. The provision of permanent terminal facilities will be taken in hand early next year, it having been stated that the increased subsidy, which amounts to $420,000, was granted largely in order that these might be provided. (Oct., pg. 479.)

Railway Finance, Meetings, Etc.

Canadian Northern Ry.—A prospectus was issued in England, Oct. 31, by Lloyds Bank, Limited, offering for subscription £1,500,000 five per cent. land mortgage debentures due June 1, 1923, part of a total authorized issue limited to £3,500,000, the issue price being 95%. They are a direct obligation of the C.N.R., both as to principal and interest, and are secured by a trust deed constituting them a specific charge on the whole of the debenture stock and capital stock of the Canadian Northern Town Property, Ltd., and upon the C.N.R. Co.'s land grant and deferred payment on land already sold.

Canadian Northern Railway.—At the annual meeting in Toronto, Nov. 24, the report printed on pages 564 and 565 of this issue was adopted. The directors for the current year, who were re-elected, are as follows:—Sir Wm. Mackenzie, President; Sir Donald Mann, Vice President; Z. A. Lash, Senior Counsel; R. M. Horne-Payne, director representing company in Europe; Frederic Nicholls, Toronto.

Canadian Pacific Ry.—The New York Stock Exchange gave notice, Nov. 18, that a further $60,000,000 of common stock of the C. P. R. would be listed after Dec. 3 on official notice of issuance and payment in full. The common stock now listed in New York amounts to $260,000,000.

Central Vermont Ry.—The following officers were elected for the current year, at the recent annual meeting of the directors: Excutive committee, E. J. Chamberlin, E. C. Smith and E. H. Baker; Chairman, E. J. Chamberlin; President, E. C. Smith; Vice President, C. W. Witters; Treasurer and Clerk, W. H. Chaffee; Auditor, E. Deschenes, Jr.

Grand Trunk Ry.—It is announced that $2,500,000 4½% equipment trust notes have been sold to Blair and Co., New York. Part of this issue is offered in London, Eng., showing a yield of 5¼%.

London and Port Stanley Ry.—A special meeting of shareholders has been called to be held in London, Ont., Dec. 9, to lease the line to the City of London upon terms to be agreed. The line is practically owned by the city, and is at present leased to the Lake Erie and Detroit River Ry., the Canadian subsidiary of the Pere Marquette Rd. A bylaw has been approved by the citizens providing for the electrification of the line, on the termination of the present lease, which expires in a few months.

Temiscouata Ry.—A dividend of 1¼% has been declared on the provisional certificates in respect of profits earned during the year ended June 30, as compared with 1% for the previous year.

Net earnings for August, $5,849, against $7,086 for Aug., 1912. Aggregate for two months ended Aug. 31, $10,434 against $16,027 for same period 1912.

White Pass and Yukon Route.—Gross earnings from Jan. 1 to Oct. 14, $985,799, against $1,049,348 for same period 1912.

East End Incline Ry., Hamilton.—A landslide at this incline railway at Hamilton, Ont., Nov. 3, completely wrecked the line. The City Engineer proposed a plan for the reconstruction of the line, at a meeting of the Board of Control, Nov. 8, and the matter is being discussed with G. F. Webb, the owner of the old incline. The City Engineer has practically completed plans for the building of a new incline railway at Sherman Ave., at an estimated cost of $125,000. No definite action will be taken until the owners of the incline at Wentworth St. have decided what to do with their damaged property.

Canadian Railway
AND
Marine World
Established 1898

Devoted to Steam and Electric Railway, Marine, Express, Telegraph, and Railway and Canal Contractors' Interests.
Official Organ of the various Canadian Transportation Associations.
Published on the first of each month.

ACTON BURROWS, LIMITED - Proprietors.
70 Bond Street, Toronto, Canada.

ACTON BURROWS, A.Can.Soc.C.E.,
Managing Director and Editor-in-Chief.
AUBREY ACTON BURROWS - Secretary and Business Manager.

Associate Editor - - - John Keir
Associate Editor - - - Donald F. Keir
Mechanical Editor - Frederick H. Moody, B.A.Sc.

Business Representatives.
W. H. Hewitt, - 70 Bond Street, Toronto
A. Fenton Walker, 143 Liberty Street, New York, N.Y.
J. Meredith McKim, 17 Cockspur St., London, S.W., Eng.

Authorized by the Postmaster General for Canada, for transmission as second class matter, July 3, 1912.

Entered as second class matter, July 25, 1913, at the Postoffice at Buffalo, N.Y., under the Act of Congress of March 3, 1879.

SUBSCRIPTION PRICES, INCLUDING POSTAGE:

TORONTO AND WEST TORONTO POSTAL DELIVERY, $1.25 a year.

To other places in CANADA, and to NEWFOUNDLAND AND GREAT BRITAIN, $1 a year.

To the UNITED STATES and other countries in the Postal Union, except those mentioned above, $1.50 a year, or six shillings sterling.

SINGLE COPIES, 15 cents each, including postage.

The best and safest way to remit is by express money order. Where one cannot be obtained, a post office money order, or bank draft, payable at par in Toronto, may be sent. Cheques or drafts not payable at par in Toronto cannot be accepted. Remittances should be made payable to CANADIAN RAILWAY AND MARINE WORLD.

NOTICE TO ADVERTISERS.

ADVERTISING RATES furnished on application.

ADVERTISING COPY must reach the publishers by the 10th of the month preceding the date of publication.

TORONTO, CANADA, DECEMBER, 1913.

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Railway Rolling Stock Notes.

The Intercolonial Ry. has received 10 box cars, 60,000 lbs. capacity from the Nova Scotia Car Works.

A press report from Moncton, N.B., states that it is probable that during the next few weeks some substantial orders for rolling stock for the Intercolonial Ry. will be placed.

The G.T.R. has received 20 Mikado type locomotives, nos. 550 to 569, from the Montreal Locomotive Works; 537 box cars from the Canadian Car and Foundry Co.; and 220 box cars from the Eastern Car Co.

The Dominion Dredging Co., St. Catharines, Ont., contractors on section 1 on the Welland Ship Canal, has ordered 3 six wheel switching locomotives from Montreal Locomotive Works.

The C.P.R., between Oct. 13 and 31, ordered the following rolling stock from its Angus Shops,—1 flanger, 1 superintendent's business car, 190 steel frame box cars, 3 refrigerator cars, 17 stock cars, 2 vans and 1 pile driver.

The Grand Trunk Pacific Ry. has received the following additions to rolling stock,—6 parlor cafe cars, nos. 3905 to 3910, and 10 first class cars, nos. 2054 to 2063, from Pullman Co.; and 10 second class cars, nos. 1021 to 1030, from Canadian Car and Foundry Co.

The C.P.R., between Oct. 13 and 31, received the following additions to rolling stock,—137 steel frame box cars, 14 vans and 4 class U3 locomotives, from its Angus Shops; 114 steel frame box cars from Canadian Car and Foundry Co.; 2 class D10 locomotives from Canadian Locomotive Co.; 1 class N3 locomotive from Canadian Allis-Chalmers Ltd., and 499 steel frame box cars from Barney and Smith Car Co.

The Canadian Northern Ry. between Oct. 14 and Nov. 13, received the following additions to rolling stock, 16 cabooses from its Winnipeg Shops; 75 steel ore cars from Nova Scotia Car Works; 30 stock cars, from Crossen Car Co.; 110 box cars and 15 steel underframe flat cars from National Steel Car Co.; 3 combination passenger cars from Preston Car and Coach Co.; 5 switching locomotives from Canadian Locomotive Co., and 3 consolidation locomotives from Canadian Allis-Chalmers Ltd.

With reference to the item in our last issue stating that the Pacific Great Eastern Ry. was in the market for locomotives and cars, we were officially advised, on Oct. 30, that the rolling stock to be purchased was, approximately, 4 locomotives, 45 box cars, 75 flat cars, 18 ballast cars, 3 refrigerator cars and 4 cabooses. A press report from Vancouver of Nov. 8, stated that D'Arcy Tate, Vice President, P.G.E.R., had announced that two locomotives had already arrived from the East and another two were on the way, and that other rolling stock had been ordered and would arrive in Vancouver.

Following are chief details of the consolidation locomotive which the Dominion Coal Co. is having built by the Montreal Locomotive Works, as mentioned in our last issue:—

Cylinders, diar. and stroke	21 by 26 ins.
Tractive power	39,000 lbs.
Factor of adhesion	4.1
Wheel base, driving	15 ft.
Wheel base, total	23 ft.
Wheel base, engine and tender	51 ft. 6½ ins.
Weight in working order	179,000 lbs.
Weight on drivers	160,000 lbs.
Weight on engine truck	19,000 lbs.
Weight, engine and tender	272,000 lbs.
Boiler, type	Straight top
Boiler, diar. first ring	72 ins.
Boiler, working pressure	200 lbs.
Firebox, length and width	96 by 72 ins.
Crown staying	Radial
Tubes, no. and diar.	368—2 ins.
Tubes, length	13 ft. 11 ins.
Heating surface, tubes	2,665 sq. ft.
Heating surface, firebox	150 sq. ft.
Heating surface, total	2,815 sq. ft.
Grate area	48 sq. ft.
Wheels, driving, diar.	50 ins.
Wheels, material—Driving, cast steel; others, cast iron	
Axles, engine truck journals	6 by 10 ins.
Wheels, engine truck, diar.	30 ins.
Wheels, tender, diar.	33 ins.
Axles, driving journals	9 by 12 ins.
Axles, tender truck journals	5 by 9 ins.
Journal boxes	Cast steel
Brake	Westinghouse American
Engine truck	Two wheel radial
Tank, type	U shape, sloping top
Capacity, water	4,000 U.S. galls.
Capacity, coal	8 tons

All Red Line Ry.—Application is being made to the Dominion Parliament to incorporate a company with this title to build a railway from near Cape St. Charles on the Atlantic coast, westerly north of lat. 52, to Lake Ashunipi, then southerly to the southern end of Lake Mistassini, and intersecting the projected Ottawa and Ungava Ry., thence crossing the Nottaway, and Harricanaw Rivers, to the Quebec-Ontario boundary, reaching the Albany River at Martin's Falls, then on westerly to the mouth of Lake Winnipeg, crossing the Dominion Government Railway to Hudson Bay at Cormorant Falls, Man., keeping north of Montreal Lake, Sask., and south of Lac de la Biche to Athabasca Landing, Alta., thence north of Lesser Slave Lake to Peace River Landing, then on to Parsnip River, and continuing via. Fort Fraser to a terminus at the head of Dean's Channel, on the Pacific Coast. Power is also being asked to build branch lines from Martin's Falls to Winnipeg, thence back to the main line near Moose Lake, Sask.; from the Peace River Valley to the Yukon Territory; and via. the Peribonka River Valley to Quebec City. J. K. Dowsley, Prescott, Ont., solicitor for applicants.

Forty Locomotives Converted to Burn Oil have been put in service this month on the C.P.R. between Vancouver and North Bend, B.C., 129.1 miles. The change has been made on passenger, freight and yard engines, and oil depots have been established at intervals along the subdivision. The work of converting locomotives for oil consumption is now under way for the entire British Columbia division between Vancouver and Field, 510.1 miles, it is reported, and the new fuel will be in use at an early date. East of Field the use of coal will be continued. Crude petroleum from California is worth about $1 per 42 gal. barrel in Vancouver, and it is estimated that coal costs the railway about $3 a ton. The use of oil fuel removes the necessity for maintaining a fire patrol along the railway, which is required of coal burning roads by provincial statute.

Dominion Railway Subsidy Agreement.—The Dominion Government has entered into an agreement with the Lake Erie and Northern Ry. under the act granting aid for the construction of railways, in respect of a line from Galt to Port Dover, Ont., not exceeding 58 miles.

The G.T. Pacific Ry. machinists and boiler makers have applied to the Minister of Labor for the appointment of a conciliation board to enquire into their application for higher rates of wages and improved working conditions, and have named J. T. Murray as their representative. It is understood that a complete board will be appointed.

The arbitration board appointed to deal with a new schedule between the C.P.R. and its maintenance of way employes, consists of Chief Justice R. M. Meredith, of the Court of Common Pleas of Ontario, Chairman; Wallace Nesbitt, K.C., for the C.P.R., and H. Irwin, Portage la Prairie, Man., for the employes.

Mainly About Transportation People.

R. B. ANGUS, director, C.P.R., has resigned the presidency of the Bank of Montreal.

Mrs. Peart, wife of J. W. PEART, agent, G.T.R. and Wabash Rd., St. Thomas, Ont., died there, Nov. 5.

J. K. L. ROSS has been elected a director of the Canadian General Electric Co., in place of his father, the late James Ross.

J. J. H. RENSHAW, agent, G.T.R., Blair, Ont., was found dead in the station there, Nov. 4, as the result of drinking carbolic acid.

SIR WILLIAM VAN HORNE, K.C.M.G., addressed the Canadian Club, Toronto, on the public's attitude towards railways, Nov. 17.

Mrs. G. R. Pattullo, who died at Woodstock, Ont., Oct. 31, was a sister of W. H. BIGGAR, K. C., General Counsel, G. T. R., Montreal.

W. D. REID, President, Reid Newfoundland Co., who has been suffering from congestion of the lungs and bronchitis, is reported to be convalescing.

A statue, 9 ft. high, of LORD MOUNT STEPHEN, first President of the C.P.R., has been placed in the new waiting room of Windsor St. station, Montreal.

FRANK D. LYMAN, Manager, Railway Supply Department, John Millen & Son, Ltd., Montreal, was married at Bridgeport, Conn., recently, to Miss E. S. Wilson.

A. S. MAYNARD, Commissary Agent, Sleeping, Dining and Parlor Cars and News Department, C.P.R., Montreal, is reported to have resigned to enter private business.

J. A. TWOHEY, an attorney, of Washington, D.C., who has acted in Interstate Commerce Commission cases, for the C.P.R., committed suicide in an hotel at Ottawa, Ont., Nov. 21.

Mrs. Tiffin, wife of E. TIFFIN, General Western Agent, Canadian Government Railways, Toronto, returned, Nov. 4, from England and Ireland, where she spent some months.

The engagement of Miss M. P. Wainwright, daughter of W. WAINWRIGHT, Vice President, G.T.R. and G.T. Pacific Ry., Montreal, to R. D. Bell, Staten Island, N.Y., is announced.

Mrs. Baker, wife of W. R. BAKER, Secretary, C.P.R., and Assistant to the President, sailed from New York early in November for Europe, to spend the winter in Italy and the south of France.

W. G. CHACE, M. Can. Soc. C. E., of Kerry & Chace, Ltd., Consulting Engineers, Toronto, has been appointed Chief Engineer for the construction of the Greater Winnipeg water supply system.

J. G. KERR, a G.T.R. dispatcher at London, Ont., was run over by a train and instantly killed, near Lobo, Ont., Nov. 10. He was repairing some telegraph lines which had been blown down.

W. E. MULLINS, General Manager, United Fruit Co., of Costa Rica, with jurisdiction over the company's railway system, and formerly in G.T.R. service in Canada, visited his old home in London, Ont., recently.

C. M. PIKE of the Audit Department, Canadian Northern Quebec Ry., Quebec, was presented with a travelling bag by a number of the local staff, on his leaving the service for a position in the Provincial Crown Lands Department.

W. C. CHISHOLM, K.C., formerly of Toronto, who was appointed some months ago General Solicitor of the G.T.R. with headquarters at Montreal, has taken up his residence, with his wife and family, at 35 Aberdeen Ave., Westmount.

ALEX. JEFFREY, who died at Montreal, Oct. 30, aged 78, was a well known contractor, having in addition to a number of works in connection with the Lachine Canal, built the Mount Royal Incline Railway, as well as the cars used thereon.

JOHN PRICE, who died at Toronto, Nov. 7, aged 82, was for many years in the G.T.R. Baggage Department, retiring from the service about 20 years ago. He was father of A. Price, Assistant General Manager, Eastern Lines, C.P.R., Montreal.

T. C. KEEFER, C. M. G., Honorary Member Canadian Society of Civil Engineers, Honorary Member of the Institute of Civil Engineers (Eng.), and a past President of the American Society of Civil Engineers, has been elected an Honorary Member of the latter society.

G. A. Montgomery,
General Superintendent, Algoma Central and Hudson Bay Ry., and Algoma Eastern Ry.

The estate of the late ROBERT REFORD, of the Robert Reford Co., steamship agents, etc., who died at Montreal recently, has been valued for probate at $2,912,486. With the exception of some charitable bequests, the estate is divided amongst the widow and children.

SIR THOMAS TAIT, President, Fredericton and Grand Lake Coal and Ry. Co., addressed the Canadian Club at Montreal, Nov. 10, on a number of questions relating to the Empire, and gave experiences of his stay in Australia, where he was for some time Chairman of the Victorian Railway Commission.

A. R. HOWARD, General Yardmaster, C. P.R., Vancouver, B.C., who was recently accidentally shot whilst on a hunting trip, was born July 25, 1881, and from 1904 to Oct. 1911, was in C.P.R. service at Vancouver, B.C., as yard man, yard foreman and Yardmaster, and since the latter date, as General Yardmaster.

ALEXANDER HILTON, who has recently been appointed Passenger Traffic Manager, St. Louis and San Francisco Rd., St. Louis, Mo., was born at Hamilton, Ont., and entered railway service in 1878, as clerk on the Great Western Ry., now a portion of the G. T. R. Since 1880 all his railway service has been in the United States.

Mrs. Chipman, wife of C. C. CHIPMAN, who was for some 20 years prior to 1912, Commissioner, Hudson's Bay Co., at Winnipeg, died at London, Eng., Oct. 26 Since Mr. Chipman's retirement from active service, he has made his home in England. With Mrs. Chipman, he was in Canada recently, and only returned to England three weeks before her death.

J. W. STEWART, railway contractor of Foley, Welch and Stewart, Vancouver, B.C., is reported to have purchased a large tract of land in Sutherlandshire, Scotland, from the Duke of Sutherland. Mr. Stewart already holds a considerable quantity of property at Assyut, in that county, where he was born, and the present purchase practically doubles his holding.

A. C. BRADY, Assistant Superintendent, Montreal Terminals, C.P.R., who died at Montreal, Nov. 20, was born there Nov. 18, 1875, and entered C.P.R. service in 1889. He had been successively, agent at Farnham, Que., Magog, Que., Newport, R.I., and Outremont, Que., and Inspector of Montreal Terminals. He was the only son of F. P. Brady, General Superintendent, Canadian Government Railways, Moncton, N.B.

AUBREY CECIL BAKER, who has been appointed Inspector of Stations, Trains and Train Dispatching, Canadian Government Railways, Moncton, N.B., was born at Lacadie, Que., Aug. 5, 1878, and entered railway service, Oct. 1, 1895, since when he has been, to Apr. 1900, agent and operator, at various points, Eastern Division, C.P.R.; May 1900 to Oct. 1913, dispatcher and Chief Dispatcher, consecutively, Lake Superior Division, C.P.R., Chapleau, Ont.

THOMAS WILLIAM HENNESSY, whose appointment as District Master Mechanic, District 2, Intercolonial Ry., Campbellton, N.B., was announced in our last issue, was born at Truro, N.S., Nov. 22, 1862, and entered I.R.C. service Nov. 22, 1882, since when he has been, to Feb. 28, 1888, fireman at Truro, N.S.; Feb. 28, 1888 to Dec. 29, 1902, locomotive driver at Truro; Dec. 29, 1902 to Apr. 9, 1904, Mechanical Foreman, Truro; Apr. 9, 1904 to Sept. 30, 1913, locomotive driver, Truro.

PERCY G. GALBRAITH, whose appointment as Inspector of Telegraphs, Ontario Division, C. P. R., Toronto, was announced in our last issue, was born at Toronto, Aug. 2, 1879, and entered C.P.R. telegraph service, July 19, 1892, since when he has been, to Dec. 1, 1899, consecutively, messenger, collector, clerk and relief operator, Toronto; Dec. 1, 1899, to May 1, 1905, clerk and stenographer, Superintendent's office, Toronto; May 1, 1905, to Oct. 1, 1913, chief clerk to Superintendent, Toronto.

F. B. TAPLEY, who has been appointed Assistant Engineer Maintenance of Way, Eastern Lines, C.P.R., Montreal, was born at St. John, N.B., Oct. 17, 1876, and entered C.P.R. service, July, 1903, since when he has been, to Apr., 1905, rodman, St. John N.B.; Apr., 1905 to Apr., 1907, transit man, St. John, N.B.; Apr., 1907, to July, 1908, acting Resident Engineer, Belleville Jct., Ont.; July, 1908, to Dec., 1911, Resident Engineer, Belleville Jct., Ont.; Dec., 1911 to Oct., 1913, Resident Engineer, London, Ont.

GEOFFREY S. ANDREWS, who has been appointed Agent, Sleeping and Dining Cars, Canadian Northern Ry., Duluth, Minn., was born at Montreal, Apr. 5, 1890, and entered transportation service, Jan., 1909, since when he has been, to 1910, sleeping and dining car storekeeper, C.P.R., Fort William, Ont.; 1911, assistant chief clerk to dining car department, C.P.R., Winnipeg; 1912 to 1913, dining car conductor, G.T. Pacific Ry., Winnipeg; Oct. 1 to Nov. 1, 1913, Inspector, Sleeping and Dining Cars, Canadian Northern Ry., Winnipeg.

DAVID PATTERSON, who has been appointed Superintendent, Union Stock Yards, St. Boniface, Man., was born at Waldemar, Ont., Sept. 13, 1870, and entered transportation service, June 1, 1887, since when he has been, to Sept., 1894, telegraph operator and ticket agent, C.P.R., Toronto; Sept., 1894, to May, 1896, agent, C.P.R., Caledon, Ont.; May, 1896, to Dec., 1901, agent, C.P.R., Woodbridge, Ont.; Jan., 1902, to Dec., 1906, agent, Brampton, Ont.; Dec., 1906, to July, 1912, agent, Woodstock, Ont.; July, 1912, to Nov., 1913, agent, C.P.R. Stock Yards, Winnipeg.

The Toronto Mail and Empire recently stated that "there is no foundation for the report that CHARLES MURPHY, Superintendent, C.P.R., Toronto, has been or is to be appointed to the Railway Commission. No vacancy exists on that body, nor has Mr. Murphy been appointed to its staff." It might also have added, "nor is he Superintendent, C.P.R., Toronto." He is General Superintendent, Manitoba Division, C.P.R., Winnipeg, and was Superintendent, District 2, Ontario Division, Toronto, about six years ago, and has held several different positions in the interval.

J. D. McAULEY, who has been appointed City Freight Agent, G.T. Pacific Ry., Vancouver, B.C., was born at Plantagenet, Ont., June 11, 1884, and entered railway service, Oct. 1, 1903, since when he has been, to Aug. 1, 1908, in the local Freight Department, Bonaventure Station, G.T.R., Montreal; Aug. 1, 1908, to May 1, 1910, in Freight Claims Agent's Office, same road, Montreal; May 1, 1910, to May 1, 1911, Inspector, Canadian Freight Association; May 1, 1911, to July 1, 1913, in General Foreign Freight Agent's Office, G.T.R., Montreal; July 1, to Sept. 1, 1913, Soliciting Freight Agent, G.T. Pacific Ry., Montreal.

GEORGE EDWARD SMART, whose appointment as Master Car Builder, Intercolonial Ry., Moncton, N. B., was announced in our last issue, was born at Edinburgh, Scotland, Dec. 23, 1873, and entered railway service in 1892, since when he has been, to 1897, in various positions in car shops, G. T. R., Montreal; 1897 to 1904, Car Inspector, G.T.R., Montreal; 1904 to 1906; General Inspector, Heating and Lighting, Eastern Lines, C.P.R., Montreal; 1906 to 1909, General Car Inspector, Eastern Lines, C.P.R., Montreal; 1909 to Sept. 30, 1913, Division Car Foreman, Eastern Division, C. P. R., Montreal.

H. R. NAYLOR, whose appointment as Division Car Foreman, Eastern Division, C.P.R., Montreal, was announced in our last issue, was born at Hull, Eng., Aug. 30, 1885, and educated at the Municipal Technical School, there. He served an apprenticeship in the North Eastern Ry. shops at Hull, and came to Canada in 1907, since when he has been, from Dec., 1907, to Feb., 1909, pattern maker, Angus Shops, Montreal; Feb., 1909, to Mar., 1911, draughtsman, Angus Shops, C.P.R., Montreal; Mar., 1911, to Apr., 1912, Steam Heat Inspector, Eastern Lines, C.P.R., Montreal; Apr., 1912, to Oct., 1913, General Car Foreman, Passenger Car Shops, Toronto.

A. J. RODGERS, for 12 years Superintendent of the Carborundum Co.'s plant at Niagara Falls, N. Y., who died there recently, as a result of an accident, was born in Albany, N.Y., in 1872. Previous to going to the Carborundum Co., he was Superintendent of the Eddy Electrical Co. of Hartford, Conn. He was a member of the American Chemical Society, Engineers' Society of New York, Chemists Club, Niagara Club, University Club and Country Club of Niagara Falls, and several other scientific and social organizations. His funeral was attended by several hundred members of the Carborundum Co., members of the clubs mentioned at Niagara, and other friends.

W. D. GROSSET, whose appointment as Agent, C.P.R., Antwerp, Belgium, was announced in our last issue, was born at Glasgow, Scotland, and was for many years in C.P.R. service there, and also with J. J. Roxburgh and Co., ship owners and brokers. In 1906 he was appointed chief assistant to Allan Cameron, then General Traffic Agent, C.P.R., London, Eng., and now Superintendent, Land Branch, Department of Natural Resources, C.P.R., Calgary, Alta.; he continued in the same position on the appointment of G. McL. Brown as General Traffic Agent, London, Eng., and on Mr. Brown's appointment as European Manager on the death of Archer Baker in 1910, he became chief assistant to the European Manager.

R. N. Young,
Superintendent of Telegraphs, Alberta Division,
Canadian Pacific Ry.

R. NELLES YOUNG, whose appointment as Superintendent of Telegraphs, Alberta Division, C. P. R., Calgary, was announced in our last issue, was born at Cayuga, Ont., Sept. 4, 1870, and entered transportation service, Oct. 1889, since when he has been, to Oct. 1890, telegrapher, Michigan Central Rd., between St. Thomas, Ont., and Buffalo, N.Y.; Nov., 1890, to Nov., 1902, operator and dispatcher, Western Lines, C.P.R.; Nov., 1902, to Nov., 1903, Circuit Manager, Pacific Division, C.P.R.; Nov., 1903, to Mar., 1907, Inspector of Telegraphs, Central Division, C.P.R.; Mar., 1907, to July, 1910, Assistant Superintendent of Telegraphs, C. P. R., Winnipeg; July, 1910, to Aug., 1913, Superintendent of Telegraphs, Saskatchewan Division, C. P. R.

ALBERT E. LOCK, who has been appointed Commercial Agent, Toronto, Hamilton and Buffalo Ry., Hamilton, Ont., was born at Albany, N.Y., July 14, 1879, and entered railway service, Dec. 1, 1896, since when he has been, to Sept. 1, 1897, telegraph operator and relief agent at various points, Lehigh Valley Rd.; Sept. 1, 1897, to July 1, 1902, tower man, telegraph operator, relief agent, ticket clerk, assistant agent, etc., Mohawk and Adirondack Divisions, New York Central and Hudson River Rd.; July 1, 1902, to Aug. 15, 1903, City Ticket Agent, same road, Lake Placid, N.Y.; Aug. 15, 1903, to Sept. 15, 1904, Travelling Passenger Agent, New York Central Lines, Saranac Lake, N.Y.; Sept. 15, 1904, to Nov. 1, 1913, Travelling Passenger Agent, New York Central Lines, Montreal.

JAMES MELVILLE ROBERTSON, Assoc. M. Inst. C.E., Assoc. M. Can. Soc. C.E., who was accidentally killed by the discharge of a rifle at Sylvan Lake, Alta., Canada, a short time ago, was 27 years old and the only son of Jas. Robertson, of Bonneybridge, Stirlingshire, Scotland. He received his earlier education and training for engineering in Glasgow. He was a graduate of the Glasgow West of Scotland Technical College, and afterward a pupil of Wharrie & Colledge, civil engineers, Glasgow. His experience subsequently had been principally on Canadian railways, and at the time of his death was Resident Engineer on the construction of part of the Alberta Central Ry. (a subsidiary of the C.P.R.), which included the building of the large bridge across the North Saskatchewan River at Rocky Mountain House, Alta.

T. McNEIL, whose appointment as Agent, C.P.R., Liverpool, Eng., was announced in our last issue, entered transportation service Aug. 22, 1892, and to Nov. 19, 1897, served as apprentice and junior chartering clerk, Walter Runciman and Co., Newcastle upon Tyne, Eng.; Nov. 22, 1897 to 1900, in service of Elder Dempster and Co., Liverpool, Eng., and in 1900, he succeeded the late F. W. Forster, whom he has now succeeded in the C.P.R. service, as Manager of the Freight Department, Beaver Line, which had been acquired by Elder, Dempster Co., in which position he continued until Apr. 1903, when he resigned, and was, from Apr. 1903 to Sept. 1, 1910, Manager, Freight Department, Manchester Liners Ltd., and from Sept. 1, 1910 to Oct. 1913, Agent, C.P. R., Antwerp, Belgium. In addition to being Agent for the C.P.R. at Liverpool, he is Agent for the Dominion Express Co. there.

JAMES M. MACARTHUR, who has been appointed Trainmaster, District 1, Alberta Division, C.P.R., Medicine Hat, was born at Toronto, Dec. 8, 1885, and entered C.P.R. service July 16, 1902, since when he has been, to Sept. 30, 1902, stenographer, Division Engineer's Office, Toronto; Oct. 1, 1902 to Mar. 1, 1903, stenographer, Chief Dispatcher's Office, Toronto; Mar. 1 to June 30, 1903, secretary to Superintendent, Moose Jaw, Sask.; July 1, 1903 to Aug. 8, 1907, chief clerk to Terminal Superintendent, Toronto; Aug. 9, 1907 to Aug. 1, 1909, clerk, General Superintendent's Office, Toronto; Aug. 1, 1909 to Aug. 1, 1910, assistant chief clerk, Vice President's Office, Winnipeg; Aug. 1, 1910 to Oct. 1, 1911, chief clerk, Vice President's Office, Winnipeg; Oct. 1, 1911 to Feb. 21, 1912, assistant chief clerk, Vice President and General Manager's Office, Winnipeg; Feb. 22, 1912 to Oct. 2, 1913, chief clerk to General Superintendent, Manitoba Division, Winnipeg; Oct. 3 to Oct. 28, 1913, acting Trainmaster, District 1, Alberta Division, Medicine Hat.

GEORGE A. MONTGOMERY, whose appointment as General Superintendent, Algoma Central and Hudson Bay Ry., and Algoma Eastern Ry., Sault Ste. Marie, Ont., was announced in our last issue, was born at Bradford, Ont., Feb. 11, 1871, and entered railway service, Sept. 1, 1886, since when he has been, to Sept., 1887, assistant to agent, Northern Ry., Newmarket, Ont.; Sept., 1887, to Mar., 1889, agent, G.T.R., Powassan, Ont.; Mar. 1889 to Mar 1890, freight clerk, C. P. R., North Bay, Ont.; Mar., 1890, to June, 1893, chief clerk, Freight Department, C. P. R., Sudbury, Ont.; June to Aug. 31, 1893, relieving agent, C. P. R., North Bay, Ont; Aug. 31, 1893, to June, 1900, chief clerk to Superintendent, District 1, Lake Superior Division, C. P. R., North Bay, Ont.; June, 1900, to Aug. 28, 1902, chief clerk to General Superintendent, Algoma Central and Hudson Bay Ry., Sault Ste. Marie, Ont.; Aug. 28, 1902, to Aug. 15,1910, Superintendent, Algoma Eastern Ry., Sudbury, Ont.; Aug. 15, 1910, to Mar. 1, 1911, Superintendent, A. C. & H. B. R., Michipicoten Harbor, Ont.; Mar. 1, 1911, to Oct. 15, 1913, Superintendent, A. C. & H. B. R. and A. E. R., Sault Ste. Marie, Ont.

W. C. BROWN, President, New York Central Lines, New York, has resigned on account of defective hearing. He was born in Herkimer County, N.Y., in 1853, and commenced railway work at the age of 16, as a section hand and fireman on the Chicago, Milwaukee and St. Paul Ry., during which period he learnt telegraphy and was made an operator. After two years he transferred to the Illinois Central Rd. as dispatcher, and later served in a similar capacity on the Chicago, Rock Island and Pacific Rd., and the Chicago, Burlington and Quincy Rd. In 1880 he was Chief Dispatcher on the latter road, and in 1881, Trainmaster; 1884, Assistant Superintendent; 1887, Superintendent; 1890, General Manager, Hannibal and St. Joseph and Kansas City, St. Joseph and Council Bluffs Rds., both parts of the Burlington System. In 1891 he was also appointed General Manager, Chicago, Burlington and Kansas City, and St. Louis, Keokuk and Northwestern Rds., and in 1896, General Manager, Chicago, Burlington and Quincy Rd. In July, 1901, he was appointed Vice President and General Manager, Lake Shore and Michigan Southern Ry., and was later given direct charge of that road. Shortly after his appointment as Vice President and General Manager, L.S. & M.S. Rd., he was also appointed Vice President, New York Central and Hudson River Rd., and later his jurisdicton was extended over the New York Central Lines, and in 1909 he was appointed President.

PETER ALEXANDER PETERSON, who died at Montreal, Nov. 21, after a long illness, was born at Niagara Falls, Ont., Nov. 8, 1839, and educated at the University of Toronto. He entered engineering service in 1859 as an articled pupil with T. C. Keefer, Hon. M. Can. Soc. C.E., and remained with him as student and assistant until May, 1867, during which time he was engaged on the Hamilton and Port Dover Ry., Hamilton waterworks, a survey for a Georgian Bay canal, and on dam construction on the Grand River at Paris and Brantford, Ont., and also carrying on a general consulting engineer's business in Toronto. In 1867 he was engaged on the Great Western Ry., now a part of the G.T.R.; from 1867 to 1869, Resident Engineer, New York, Oswego and Midland Ry.; 1869 to 1872, Division Engineer, Bathurst Division, Intercolonial Ry.; 1872 to Sept., 1875, Chief Engineer, Toronto waterworks; 1875 to Oct., 1881, Chief Engineer of lines between Quebec and Montreal, and Montreal and Ottawa, built by the Quebec Government, and now part of the C.P.R.; 1881 to 1890, Chief Engineer, Eastern and Ontario Divisions, C.P.R., including the construction of the bridge across the St. Lawrence River, at Lachine, Que., which has just been rebuilt as a double track bridge; 1890 to Feb., 1902, Chief Engineer, C.P.R. On his retirement he was given the honorary title of Consulting Engineer, and later acted as Chief Engineer of the Guelph and Goderich Branch, which was completed in 1908, since when ill health has kept him from any active work. He was a Member of the Canadian Society of Civil Engineers, from 1887, a councillor in 1887-88-90-91; a Vice President in 1889-1892 and 1893, and President in 1894. He was also a Member of the Institute of Civil Engineers (Eng.), and a Member of the American Society of Civil Engineers, of which he was a Vice President in 1896.

Grand Trunk Railway Betterments, Construction, Etc.

Southern New England Ry.—J. S. Murdoch, Vice President, informed the Providence, R.I., City Council, Nov. 13, that the bridge at Elmwood Ave., which was left unfinished when construction was stopped on the line in 1912, will shortly be completed.

Work has been resumed on the grading of the line between Palmer, Mass., and the Rhode Island boundary, according to official advices received, and a recent statement credited to E. J. Chamberlin, President, G.T.R., is to the effect that financial arrangements have been made for the grading of the line through Massachusetts.

Lachine, Jacques Cartier and Maisonneuve Ry.—Application is being made to the Dominion Parliament for an extension of time for the building of the line authorized by sec. 1, chap. 104, statutes of 1911. One of the matters, and probably the main one now unsettled, is the purchasing of the right of way. The Smythe estate, part of which is being acquired, is taking the matter to court, the difference in valuation being considerable. The price offered by the company works out at 17 cents a square foot, while the owners ask $1.25 a square foot.

Track Elevation in Montreal.—The City Engineer of Montreal has submitted an estimate to the Board of Railway Commissioners showing that the proposed elevation of the G.T.R. tracks in the city could be carried out for $5,500,000. The cost of the work between Bonaventure Station and Point St. Charles, as estimated by the G. T.R. engineers, is $5,760,000. It is expected that the Board will shortly reach a conclusion on the matter, and decide the proportion which shall be paid by the city. The city has already power to contribute $2,000,000 to the cost, but the company asks that this be raised to $2,800,000, on account of the great increase in the cost of material and labor since it was decided upon.

E. J. Chamberlin, in a recent interview, referring to the matter, said it was doubtful if the track elevation at Montreal and the building of a new station which was involved, could be carried out at the same time as the building of the viaduct and the provision of a new union station at Toronto. There would be too much dislocation of traffic, even if the money for the two works was available.

St. Catharines' Freight Sheds. — The freight sheds just west of the station at St. Catharines, Ont., were destroyed by fire, Nov. 3, the loss being estimated at $50,000.

The Detroit and Huron Ry. extends from Cass City to Bad Axe., Mich., 18.25 miles. It was completed during this year, we are officially advised, by the D. and H. Ry. Co., a subsidiary of the G.T.R. The construction was light, the country through which the line runs is a typical farming one, and is especially adapted for the cultivation of sugar beets and beans. The contractors started work in Aug., 1912, a train service was put in operation, Sept. 9, 1913, and construction was finally completed Oct. 15. (Oct., pg. 480.)

Dominion Government Railway to Hudson Bay.

According to an interview with J. D. McArthur, general contractor for this line, at Ottawa, Nov. 5, grading has been completed for 150 miles from Pas, Man., and it is expected to have track laid for 130 miles by Dec. 31. Grading from mileage 150 to Thicket Portage, mileage 200, is practically completed. Track laying had been delayed on account of the delay in getting steel in. Supplies and construction material are being got in to the construction camps, and it is expected, provided there is no shortage of labor, to have the grading finished to Fort Nelson by the end of 1914.

Work was started Oct. 31, at Pas, in laying out the terminals for the line, and on the section of line which will connect the Canadian Northern Ry. with the government line. It is expected that everything will be completed this year or that construction of the locomotive house and other buildings can be gone on with early in the spring.

L. G. Denis, a hydro-electric engineer, recently reported to the Dominion Government that he had completed surveys of the water powers along, and in the vicinity of the route of the line. While there are many water powers, economic conditions of development are not at present practicable. To be profitably developed there should be a continuous market for the power, and in view of the economic potentialities of the district, he does not see any prospect of such a market being developed. The cost of developing power at such points as would be necessary for the operation of the line by electricity would be such that it would not pay.

The Grain Growers' Grain Co.'s annual meeting was held in Winnipeg, Nov. 11. The report for the year showed a net profit of $170,000, after paying a loss of $30,000 on the operation of the Manitoba Government elevators for the season. The company's paid up capital is $645,000, the net profits showing more than 25%. Dividends of 10% have been paid for the year. The total amount of business handled exceeded $50,000,000. The President announced that the Manitoba Government had cancelled the company's lease of the elevators as from Aug., 1914.

The Morrison Construction Co., Ltd., has been incorporated under the Dominion Companies Act, with $100,000 capital and office at Ottawa, Ont., to carry on a general contracting business, including the construction of railways, tramways, harbors, shipping places, wharves, etc. K. A. Morrison, who has been awarded the contract for the diversion of the Intercolonial Ry. between Nelson and Derby Jct., N.B., is chiefly interested in the company.

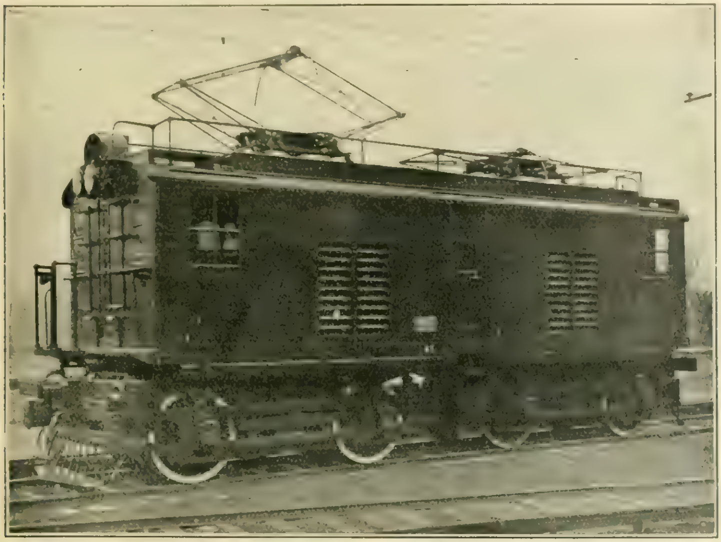
Jones, Girouord and Co., Ltd., has been incorporated under the Ontario Companies Act, with $50,000 capital and office at Ottawa, to carry on a general contractors' business. A. M. Jones and E. C. Girouord, two of the incorporators, have a contract on C.P.R. second track work between Islington and Guelph Jct., Ont., and have done other railway contracting work.

The National Association of Purchasing Agents has been organized in New York with the object of collecting and disseminating ideas and information amongst purchasing agents. E. B. Hendricks, P. O. Box 1406, New York, is temporary secretary.

J. H. Tromenhauser Co., Ltd., has been incorporated under the Dominion Companies Act, with $100,000 capital and offices at Toronto, to carry on the business of engineers and general contractors.

Electric Locomotives for Mount Royal Tunnel, Canadian Northern Railway.

Some general information in regard to the principal electrification features of the Mount Royal Tunnel, Montreal, supplied by W. C. Lancaster, Electrical and Mechanical Engineer, Canadian Northern Montreal Tunnel and Terminal Co., was published in Canadian Railway and Marine World for November. The following fuller details in regard to the electric locomotives, six of which have been ordered, has since been received. As before stated they will be designed for an operating potential of 2,400 volts direct current, with vertical trolley construction. Two of them, operated and controlled as a single unit, will have ample capacity and suitable speed requirements for handling the heavy transcontinental passenger trains—1,130 tons trailing load—within the Montreal terminal zone. A single locomotive will successfully handle the freight trains—1,000 tons trailing—and the local passenger service—550 tons trailing.



Electric Locomotive of Similar Type to those ordered for Mount Royal Tunnel.

The general type of locomotives to be used is that known as the box cab articulated running gear. The estimated weight of the complete locomotive is 83 tons. The locomotive will have four axles, with all of the weight of the locomotive upon the eight driving wheels, thus securing the maximum adhesive weight on drivers. The running gear will consist of two four wheel trucks, articulated together by a heavy hinge. The equalization of the trucks will be accomplished by a heavy locomotive type semi elliptic leaf spring, over each journal box, connected through spring hangers to the frame and to the equalizer bars. Practically a three point suspension will thus be supplied through the side equalization of one of the trucks and both side and cross equalization of the other truck. With friction draft gear mounted in the end frame casting of the truck, this type of construction will, it is claimed, restrict the hauling and buffing stresses to the truck side frame and articulated joint, instead of through the cab centre plate, thus relieving the cab and apparatus from the effect of severe shocks.

Both the box cab and platform will be built of plates, sheets, angles and heavy channels, and will be thoroughly reinforced throughout. The box cab will be divided into three compartments; the apparatus compartment in the centre and the two operators' compartments at the ends. Each operator's compartment will have a full complement of apparatus, consisting of controller, control switches, meter, air brake control apparatus, air gauges, pantagraph control and heaters, thus providing the locomotive with a complete double end control. All apparatus subject to 2,400 volt potential will be located in the centre apparatus compartment and screened to protect against accidental contact. The location and general arrangement of this apparatus will be such as to provide easy access from all sides for inspection, cleaning and repairs.

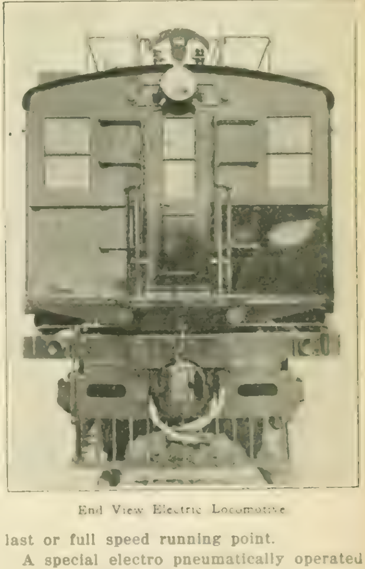
The Sprague-General Electric type M multiple unit double end control equipment is proposed for the locomotives, all the control points being proportioned and adjusted so as to secure a smooth and even acceleration, at all times, corresponding to a current consumption near the slipping point of the wheels. The transition between series and series-parallel will be effected by a special electro pneumatically operated changeover switch and the motor fields will always be on the ground side of the armature.

A motor generator set will supply 125 volt energy for the operation of the control and a 2,400 volt air compressor of 100 cubic feet free air piston displacement will be provided as part of the air brake equipment. Two air operated roller pantagraphs and a properly insulated bus line will be located upon the roof. The bus line will supply power to two or more units from the pantagraphs of any of these units.

The motor equipment will consist of four C.G.E. 229 commutating pole type motors wound for 1,200 volts and insulated for 2,400 volts, so that two may be connected permanently in series and operated on a 2,400 volt circuit. These motors will be geared to the axles through twin gears, there being one pinion on each end of the armature shaft. These motors are especially designed for locomotive service and will be provided with forced ventilation by a blower located in the apparatus compartment. The locomotives will be geared for a free running speed on tangent, level track of approximately [illegible] miles an hour and will be operated as two speed machines with ten points in series and nine points series parallel.

The air brake equipment will be the straight air and automatic type, so as to combine the desirable features for train operation through an equalizing reservoir and the independent operation of the brakes upon the locomotive. Provision will be made for the multiple operation of the compressors upon all locomotives when operating in multiple, so as to distribute the duty upon all the compressors in the train.

The motors will be operated in series and series-parallel by the Sprague-General Electric type M two speed control. The external regulating resistance will be divided into two parts, each part being directly connected to a pair of motors permanently connected in series. The two pairs of motors, with their resistances, will all be connected in series on the first point of the control, the resistance being varied through the first nine points on the controller and finally short circuited on the tenth, or running point. The two pairs of motors will then be similarly operated in series parallel and all resistances cut out on the last or full speed running point.



End View Electric Locomotive

A special electro pneumatically operated changeover switch will be used, to make the transition between series and series parallel so that there will be no appreciable reduction in tractive effort during the change. A smooth transition between all points, both rheostatic and transitional, will insure motor operation close to the slipping point of the wheels and a steady, gradual acceleration at all times.

The motors will have sufficient capacity to slip the wheels, the slipping point serving as a current limit to prevent overload

[illegible]

[illegible]

[illegible]

Provision will be made for automatically opening the control circuit and cutting off all power from the locomotive, in case the engine driver overruns a signal set against him. At the same time a special valve will be opened which will set the emergency air brake.

Following are the approximate general dimensions of the locomotives: Length [illegible] over all, 10 ft.; total wheelbase, 26 ft.; rigid [illegible] ins.; minimum radius of curvature, 150 ft.

The locomotives, as well as the rest of the electrical equipment, have been ordered from the Canadian General Electric Co.

The illustrations on this page are of a locomotive built for the Butte, Anaconda and Pacific Ry., and we are advised that the ones for the Mount Royal Tunnel will be precisely similar.

Canadian Northern Railway Construction, Betterments, Etc.

Canadian Northern Montreal Tunnel and [illegible] pleted Dec. 15. A contract for the electrification [illegible] lines has been let to the Canadian General [illegible]

[illegible] has authorized the making [illegible] Nov. 10, is [illegible]

Montreal-Ottawa-Port Arthur Line.—[illegible]

[illegible]

[illegible]

[illegible] with press reports to the effect that the company proposed to erect a car repairing plant at Port Arthur, Ont., at a cost of $30,000, we are officially advised that it is not contemplated to do so.

It was reported in Port Arthur, Nov. 10, that the company has for some time past [illegible] section of the old Port Arthur and Duluth Ry., from Stanley to the International boundary. A large number of new ties are said to have been put in; a lot of additional ballast distributed, and several new station buildings erected.

Press reports state that considerable progress [illegible] opposite Fort Frances, Ont., with 80 lb. steel.

[illegible] Rue des Menrous, St. Boniface, Man. The building is to be of concrete and brick. Benoit and Co., St. Boniface, have the contract.

Notice has been given by the company that it intends to apply for an order to per[illegible] along the route held a meeting at South [illegible] for an order directing that [illegible]

[illegible] was put in [illegible]

[illegible]

[illegible]

company's legal department, and J. A. Foley, of the engineering staff, were in Medicine Hat recently, completing the agreement with the city council. This is one of the lines, for the building of which the Alberta Legislature has guaranteed the company's bonds. The Vegreville-Calgary line, which has been in operation as far as Drumheller, is reported completed and ready for traffic as soon as the official inspections have been made.

The Board of Railway Commissioners has authorized the opening for traffic of the extension of the line from Macrorie to Tichfield, Sask., six miles, and of the branch from between those two points to Elrose, 50 miles.

Press reports state that track laying has been completed on the short line from Blaine Lake to Denholm, Sask., which will permit of the operating of traffic by a shorter route than at present from Prince Albert to Edmonton.

The Board of Railway Commissioners has approved of revised location of the line from Maryfield, Sask., westerly, from mileage 194.82 to 224.58. This line is projected to extend to Lethbridge, thence northerly to Calgary, Alta. Press reports from Lethbridge state that grading is in progress on the section of the line from Calgary southerly to Barons, at which point the line will part, one branch going to Macleod, and the other to Lethbridge.

The Alberta Legislature has increased the guarantee of bonds granted in 1909 for the building of certain branch lines from $13,000 to $15,000 a mile.

The Alberta Legislature has authorized the government to guarantee bonds of the Canadian Northern Western Ry. for $25,000 a mile, for a line from the point where the line crosses the Calgary and Edmonton Ry. near Blackfolds, for not exceeding 115 miles, on cancellation and delivering up of bonds of the same amount now outstanding.

Construction is being proceeded with on the branch line into the Brazeau River country. Owing to the large number of trestles to be erected it is not expected that track will be laid as far as the coal fields until Dec. 30.

The Board of Railway Commissioners has authorized the opening for freight traffic of the line from St. Albert, Alta., westerly, for 22 miles.

It was expected that track laying would be completed in Alberta, on the main line to Vancouver, by Nov. 20. West of the provincial boundary the line is known as the C. N. Pacific Ry., but the construction to the Alberta summit is being carried on under the supervision of the company's staff working westerly. Eighty miles of grading have been completed beyond the summit, and it is expected that track will be laid on this mileage by the end of the year. Beyond this point to the Alberta summit, grading and bridge work is reported to be well advanced.

Canadian Northern Pacific Ry.—A regular [illegible] have been completed [illegible] At this [illegible] line is [illegible] line, we are officially advised, has been com pleted, and everything is ready for construction, but tenders have not yet been invited. Grading has been completed to about 100 miles westerly from Kamloops, and 86 miles of track has been laid.

Vancouver Island Lines.—The Premier of British Columbia is reported to have stated, Nov. 10, that track had been laid for the greater part of the 140 miles from Victoria to Port Alberni, and the line would be completed by the end of next summer.

Plans for the bridge across the Selkirk water, connecting the terminals on the Songhees Reserve to the gully under the gorge bridge, have been filed. They show a bridge of the bascule type, at a height of 23 ft. above extreme low water. There will be two openings in the bridge, 60 ft. and 25 ft., respectively, to permit of the passage of small vessels.

Survey parties are reported to be in the field in the districts north of Alberni Canal, and also north of North Sound, locating a line from Port Alberni to the extreme north of the island. (Oct., pg. 478.)

Grading and Track Laying in 1913.—We have been favored with the following official particulars of grading and track laying done in Manitoba, Saskatchewan and Alberta. The figures for grading are up to Sept. 30, and for tracklaying up to Oct. 31. A great deal of the track laid this year is on grading done in 1912. The figures represent miles:—

Delisle Jct., westerly, graded this year, 13.80; track laid on 1912 grade, 31.48.

Delisle, southerly, track laid on 1912 grade, 5.61.

Bienfait-Estevan, graded this year, 8.10.

Blackfalls, westerly, graded this year, 24.70; track laid on 1912 grade, 32.55.

Camrose, southeast, graded this year, 44.60.

Edmonton to Yellowhead, main line, graded this year, 33.40; track laid on 1912 grade 111.51, on 1913 grade 13.40, total 124.91.

Deerfield Spur, track laid on 1912 grade, 12.50.

Canora, north, graded this year, 1.90.

Greenway extension, graded this year, 2.94, track laid on 1912 grade 12.25, on 1913 grade 3.08, total 15.33.

Grosse Isle, northerly, graded this year, 13.40; track laid on 1912 grade, 7.62.

Moose Jaw, southerly, track laid on 1912 grade, 1.

Oakland, northerly, track laid on 1912 grade, 11.48.

Onaway, northwest, graded this year, 6; track laid on 1912 grade, 30.40.

Prince Albert-Battleford, graded this year, 1.15; track laid on 1912 grade, 46.

Avonlea, westerly, graded this year, 7.15; track laid on 1912 grade, 48.70, on 1913 grade, 7.15, total, 55.85.

Saskatoon-Calgary, track laid on 1912 grade, 25.92.

Vegreville-Calgary, track laid on 1912 grade, 12.64.

Vonda, north, graded this year, 8.20.

Winnipeg-Fort Alexander, graded this year, 7.40.

Wroxton-Yorkton, graded this year, 2.

The total grading done this year to Sept. 30 was 174.74; track laid on 1912 grade, 389.66; on 1913 grade, 23.63; total track laid to Oct. 30, 413.29.

Railway Mechanical Conventions.— The Master Car Builders Association and the American Railways Master Mechanics Association will hold their 1914 conventions at Atlantic City, N.J., the former on June 10 to 12, and the latter on June 15 to 17.

It is said that in an investigation a few years ago, it was shown that frame failures constituted 20% of the cost of locomotive maintenance.

Transportation Appointments Throughout Canada.

[illegible] official sources, is compiled with the greatest care, so as to ensure absolute accuracy. [illegible] error in our announcements [illegible] a favor by advising us.

Canada and Gulf Terminal Ry. — J. E. PINAULT, heretofore Superintendent, has been appointed General Superintendent, exercising all duties and authority formerly assumed by Rene Dupont, Traffic Manager. Office, Matane, Que.

Canadian Government Railways.— A. C. BARKER, whose appointment as Inspector of Stations, Trains and Train Dispatching, was given in our last issue, as relating to the Intercolonial Ry. only, has jurisdiction also over the Prince Edward Island Ry. His office is at Moncton, N.B., and he was formerly Chief Dispatcher, District 2, Lake Superior Division, C.P.R., Chapleau, Ont.

Canadian Northern Ry.—F. J. CREIGHTON has been appointed City Ticket Agent, Winnipeg.

John L. Hodgson,
Master Car Builder, Grand Trunk Pacific Ry.

J. F. McGUIRE has been appointed Travelling Passenger Agent, Winnipeg.

J. HONAN, heretofore Shop Foreman at Kamsack, Sask., has been appointed Locomotive Foreman, Kindersley, Sask., vice W. Toll, transferred.

I. L. BOOMER, heretofore acting Superintendent, District 3, Western Division, has been appointed Superintendent, vice J. G. Entwistle. Office, Edmonton, Alta.

J. W. CRANE has been appointed Trainmaster, District 3, Western Division, with jurisdiction over Battle River and Calgary Subdivisions, and Camrose cutoff and Brazeau line, when taken over. Office, Big Valley, Alta.

W. TOLL, heretofore Locomotive Foreman, Kindersley, Sask., has been appointed Locomotive Foreman, Hanna, Alta., a new position.

G. S. ANDREWS, heretofore Inspector, Sleeping and Dining Cars, Winnipeg, has been appointed acting Agent, Sleeping and Dining Cars, Duluth, Minn.

Canadian Pacific Ry.—F. B. TAPLEY, heretofore Resident Engineer, London, Ont., has been appointed Assistant Engineer, Maintenance of Way, Eastern Lines. Office, Montreal.

WALTER MAUGHAN, heretofore Assistant District Passenger Agent, Toronto, has been appointed Assistant General Passenger Agent, Eastern Lines. E. J. Hebert and F. O. Hopkins remain as First Assistant General Passenger Agent and Assistant General Passenger Agent, Eastern Lines, respectively. Office, Montreal.

D. A. WALLACE has been appointed Resident Engineer, District 1, Eastern Division, vice H. T. Ruhl, resigned to enter Intercolonial Ry. service. Office, Farnham, Que.

H. J. MAIN, heretofore Dispatcher, Ottawa, Ont., has been appointed Chief Dispatcher, District 2, Eastern Division, Montreal, vice W. W. Cook, appointed a dispatcher at Smiths Falls, Ont.

E. F. L. STURDEE, heretofore chief clerk to General Passenger Agent, Eastern Lines, Montreal, has been appointed Assistant District Passenger Agent, Toronto, vice Walter Maughan, promoted.

R. V. CARLETON, heretofore Assistant General Car Inspector, Eastern Lines, Montreal, has been appointed General Car Foreman, Passenger Car Shops, West Toronto.

F. S. ROSSITER, heretofore Resident Engineer, Cranbrook, B.C., has been appointed Resident Engineer, London, Ont., vice F. B. Tapley, promoted.

J. MORTON has been appointed Locomotive Foreman, Kenora, Ont., vice J. H. Wilson, transferred.

JAMES CLIFFORD, heretofore District Engineer, Illinois Central Rd., Chicago, Ill., has been appointed Assistant Engineer, Maintenance of Way, Western Lines, C.P.R., Winnipeg.

E. D. COTTERELL, heretofore Chief Dispatcher, New York Central and Hudson River Rd., New York, has been appointed Inspector of Transportation, Western Lines, C.P.R. Office, Winnipeg.

W. J. ANDREWS, heretofore Locomotive Foreman, Neudorf, Sask., has been appointed Locomotive Foreman, Minnedosa, Man., vice J. F. Rugg, resigned.

R. M. BINNEY has been appointed Roadmaster, Brandon Subdivision, vice T. M. Fraser. Headquarters, Winnipeg.

J. DUNCAN, heretofore section foreman, Arden, Man., has been appointed acting Roadmaster, Arborg and Winnipeg Beach Subdivisions. Headquarters, Winnipeg.

F. E. RUTLAND, heretofore chief clerk, Local Freight Department, Winnipeg, has been appointed Agent, C.P.R. Stockyards, Winnipeg, vice D. Patterson, resigned.

E. H. RIDER, heretofore storekeeper at Broadview, Sask., has been appointed storekeeper at Hardisty, Man., vice J. H. Perkin, resigned.

J. T. TURNER has been appointed station master at Moose Jaw, Sask., vice E. L. Barrett, who has left the service.

W. G. McPHERSON, heretofore Locomotive Foreman, Alyth roundhouse, Alta., has been appointed Locomotive Foreman, Moose Jaw, Sask.

G. O. JACKSON, heretofore temporary storekeeper at Swift Current, Sask., has been appointed storekeeper at Broadview, Sask., vice E. H. Rider, transferred.

H. McHARDY has been appointed Locomotive Foreman, Neudorf, Sask., vice W. J. Andrews, transferred.

D. H. JOHNSON has been appointed Roadmaster, District 1, Alberta Division, in charge of Lemsford Subdivision. Headquarters, Cabri, Sask.

F. WALKER, heretofore Car Service Agent, Alberta Division, Calgary, has been appointed Superintendent, District 2, Alberta Division, vice W. J. Uren, appointed Superintendent, District 1, Ontario Division, Toronto, as announced in our last issue. Office, Calgary.

J. G. SUTHERLAND, heretofore Chief Dispatcher, Medicine Hat, Alta., has been appointed Car Service Agent, Alberta Division, vice F. Walker, promoted. Office, Calgary.

W. J. READER, heretofore storekeeper at Alyth Roundhouse, Calgary, Alta., has been appointed Foreman of Stores, Ogden Shops, Calgary, Alta.

E. A. BARNWELL has been appointed Locomotive Foreman, West Calgary Roundhouse, Alta., vice J. Reed, transferred.

H. ALLEN has been appointed Locomotive Foreman, Alyth Roundhouse, Alta., vice W. G. McPherson, transferred.

J. REED, heretofore Locomotive Foreman, West Calgary Roundhouse, Alta., has resumed his former position as Shop Foreman, Alyth Roundhouse, Alta.

E. J. BURKE has been appointed storekeeper at Alyth Roundhouse, Calgary, Alta., vice W. J. Reader, promoted.

J. E. GILES has been appointed Shop Foreman, Lethbridge, Alta.

A. A. SMITH, heretofore Trainmaster, District 1, Alberta Division, Lethbridge, has been appointed Trainmaster, District 1, Alberta Division, Medicine Hat, vice J. E. Ryan, assigned to other duties.

J. M. MACARTHUR has been appointed Trainmaster, District 1, Alberta Division. Office, Medicine Hat. There are two trainmasters at Medicine Hat.

J. E. RYAN, heretofore Trainmaster, District 1, Alberta Division, Medicine Hat, has been appointed Chief Dispatcher, District 1, Alberta Division, vice J. G. Sutherland, assigned to other duties. Office, Medicine Hat.

H. O. WHITNEY, heretofore Roadmaster, Lethbridge, Alta., has been appointed Roadmaster, Medicine Hat, Alta., vice M. P. Fitzpatrick, transferred.

W. H. GORDON, heretofore Trainmaster, District 2, Alberta Division, Strathcona, has been appointed Trainmaster, District 1, Alberta Division, vice A. A. Smith, transferred. Office, Lethbridge.

M. P. FITZPATRICK, heretofore Roadmaster, Medicine Hat, Alta., has been appointed Roadmaster, Lethbridge, Alta., vice H. O. Whitney, transferred.

C. W. FISHER has been appointed Trainmaster, District 2, Alberta Division, vice W. H. Gordon, transferred. Office, Strathcona.

G. M. KEATES has been appointed storekeeper at Strathcona, Alta., vice G. R. Blake, transferred.

D. G. McDONALD has been appointed Locomotive Foreman, Macleod, Alta., vice J. A. Maddick, transferred.

W. M. ANSLEY, hertofore Trainmaster, Grand Forks, B.C., has been appointed Trainmaster, Macleod, Alta., vice W. S. Hall, transferred.

J. A. MADDICK, heretofore Locomotive Foreman, Macleod, Alta., has been appointed Locomotive Foreman, Crowsnest, B.C.

W. S. HALL, heretofore Trainmaster, District 3, Alberta Division, Macleod, has been appointed Trainmaster, District 3, Alberta Division, vice C. Hood, transferred to British Columbia Division. Office, Cranbrook, B.C.

C. HOOD, heretofore Trainmaster, District 3, Alberta Division, Cranbrook, B.C., has been appointed Trainmaster, District 3, British Columbia Division, vice W. M. Ansley, transferred to Alberta Division. Office, Grand Forks.

C. E. WISE has been appointed storekeeper at Kamloops, B.C., vice L. Norman, transferred.

L. NORMAN, heretofore storekeeper at Kamloops, B.C., has been appointed storekeeper at Coquitlam, B.C. This is a new position.

W. WOODHOUSE, heretofore Coach Yard Foreman, Vancouver, B.C., has been appointed Shop Foreman, there, vice L. L. Hannah, deceased.

F. REEVE, heretofore coach carpenter, Vancouver, B.C., has been appointed Coach Yard Foreman, there, vice W. Woodhouse, promoted.

W. McINNES, heretofore Yardmaster, Vancouver, B.C., has been appointed General Yardmaster there, vice A. R. Howard, deceased.

E. F. RALSTON, heretofore Night Yardmaster, Vancouver, B.C., has been appointed Yardmaster, there, vice W. McInnes, promoted.

F. CLINE, heretofore acting Yardmaster, Vancouver, B.C., has been appointed Night Yardmaster there, vice E. F. Ralston, promoted.

A. E. VOYSEY has been appointed chief assistant to the European Manager, C.P.R., London, Eng., vice W. D. Grosset, appointed Agent at Antwerp, Belgium.

Central Vermont Ry.—E. C. SMITH, a former Governor of the State of Vermont, has been elected President, C.V.R., vice E. J. Chamberlin, who retains the position of chairman of the Board.

Grand Trunk Pacific Ry.—H. WISMAR has been appointed Assistant to Solicitor, Winnipeg, Man., vice A. Hutcheon, Assistant Solicitor, resigned to engage in private practice.

W. C. SCHNEIDER, heretofore Chief Car Draughtsman, Motive Power and Car Department, has been appointed Chief Draughtsman, Car Department. Office, Transcona, Man.

O. J. ROWE, General Yardmaster, Transcona, Man., is reported to have been transferred to a similar position at Edmonton, Alta.

J. D. McAULEY, heretofore Soliciting Freight Agent, Montreal, has been appointed City Freight Agent, Vancouver, B.C., vice R. N. Card, resigned on account of ill health.

The following agents have been appointed,—Uno, Man., E. A. Neupert; Duff, Sask., J. W. Le Gallais; Lewvan, Sask., F. H. Williams; Griffin, Sask., F. C. Scheppelle; Mirror, Alta., J. I. Scott; Tete Jaune, B.C., J. S. Dobie; New Hazelton, B.C., F. R. Law; Hazelton, B.C., F. A. Wildmoyer; Smithers, B.C., H. H. Boggs; Rose Lake, B.C., M. K. Thayer. The station at Morricetown, B.C., has been closed.

Grand Trunk Ry.—The following agents have been appointed,—Ste. Rosalie Jct., Que., H. E. Coderre (Pass); St. Constant, Que., W. J. Marchand; Hemmingford, Que., E. E. Bourdon; Henrysburg, Que., J. E. A. Berriault; Sundridge, Ont., J. E. Bailey; Milton, Ont., G. Williamson; Petersburg, Ont., I. C. Laschinger; Sarnia, town, Ont., W. J. Meredith; Windsor, Ont., J. E. Laughlin; Vittoria, Ont., A. J. Simmons; Tara, Ont., W. H. McPhail; Shallow Lake, Ont., C. Dopher; Gowanstown, Ont., C. S. Smith; South Indian, Ont., J. O. Prefontaine; Glasgow, Ont., A. H. Johnston; Edgington, Ont., H. Wolfe; Durham, Ont., outside, W. Calder.

Hudson Bay Railway.—J. W. PORTER, heretofore Assistant District Engineer, District B, National Transcontinental Ry., has been appointed Chief Engineer of the Dominion Government railway to Hudson Bay, vice John Armstrong, resigned. Office, Winnipeg. The report that the office had been moved from Winnipeg to Pas, Man., is premature. We are officially advised that it is the intention to do so, as soon as it can be arranged.

Intercolonial Ry.—H. T. RUHL, heretofore Resident Engineer, District 1, Eastern Division, C.P.R., Farnham, Que., has been appointed Resident Engineer, I.R.C., Truro, N.S.

E. SAVAGE has been appointed Bridge and Building Master, Moncton-Ste. Flavie Division, including branches. Office, Newcastle, N.B.

A. B. McDONALD, heretofore General Car Foreman, has been appointed Superintendent Car Shops, Moncton, N.B.

Toronto, Hamilton and Buffalo Ry.—A. E. LOCK, heretofore Travelling Passenger Agent, New York Central Lines, Montreal, has been appointed Commercial Agent, T., H. & B. R., Hamilton, Ont., vice J. D. Dewan, who resigned some time ago to enter Kansas City Terminal Ry. service at Kansas City, Mo.

Union Stock Yards, Winnipeg.—D. PATTERSON, heretofore Manager, C.P.R. Stock Yards, has been appointed Manager, Union Stock Yards, St. Boniface, Man., vice J. W. Backpit, resigned.

Canadian Northern Railway Earnings, Etc.

Gross earnings, working expenses, net earnings, increases, or decreases, compared with those for 1912-13, from July 1, 1913:—

	Gross Earnings	Expenses	Net Earnings	Increase
July	$1,928,800	$1,414,500	$514,300	$19,700
Aug.	1,824,800	1,416,200	408,600	37,800
Sept.	1,994,900	1,470,000	524,900	101,400
	$5,748,500	$4,300,700	$1,447,800	$158,900
Incr.	$ 501,500	$ 342,600	$ 158,900	. .

Approximate earnings for October, $2,687,100, against $2,351,200.

Canadian Pacific Railway Earnings, Etc.

Gross earnings, working expenses, net earnings, increases, or decreases, compared with those for 1912-13, from July 1, 1913:—

	Gross Earnings	Expenses	Net Earnings	Increase or Decrease
July	$11,993,062.27	$7 876,269 09	$4,116,793 18	x$331 383 72
Aug	11,434,459.88	7,473,320.64	3,961,139.24	x756,786.42
Sept.	12,157,082.17	7,741,503.48	4,415,578.69	165,274.84
	$35,584,604.32	$23,091,093.21	$12,493,511.11	x$922,895.30

x Decrease

Incr	.	$ 623,651 19	.	. . . . .
Decr	$ 299,244 11		$ 922 895 30	. . . . . .

Approximate earnings for October, $14,357,000, against $12,960,000 for Oct., 1912.

The mileage under operation was increased at the end of October to 11,791.

Grand Trunk Railway Earnings, Etc.

Approximate earnings for October, $5,047,641, against $4,901,954 for Oct., 1912.

TRAFFIC RECEIPTS OF THE SYSTEM.

Aggregate from July 1 to Oct 31:

	1913	1912	Increase
G.T.R....................	$15,841,292	$15,143,742	$697,550
C A R	866,363	856,053	10 310
G.T.W.R................	2,528,820	2,428,425	100,395
D G H & M R . . .	891,902	854,500	37,402
Totals	$20,128,377	$19,282,720	$845,657

Grand Trunk Pacific Railway Earnings.

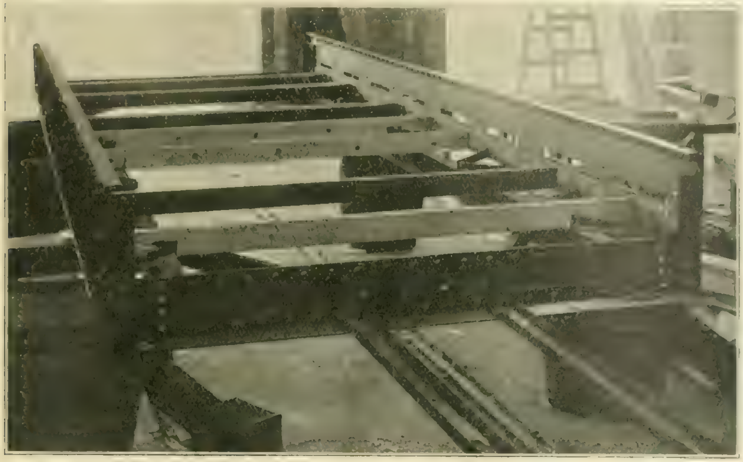
The approximate earnings of the Prairie Section and Lake Superior Branch for October were $994,303, and for 4 months ended Oct. 31, $2,732,674.

C. P. R. Operations in Austria.—After a debate lasting several days, the sub committee appointed by the Austrian Parliament to investigate the questions which recently arose as to the working of the emigration business from that country, unanimously passed a resolution approving the policy of the Ministry of Commerce in granting the C. P. R. a concession, and found that the increase in emigration was due to economic conditions, and that if there were abuses in this business, no company could be spared. In dealing with this matter, G. McLaren Brown, European Manager, visited Vienna, to look into conditions personally, and it is reported that the services of the British Foreign Office were utilized.

Electric Railway Department.

Pay-As-You-Enter Cars for London Street Railway.

The 6 single truck, single end, p.a.y.e. cars for the London Street Ry., partly described in the last issue of Canadian Railway and Marine World, are illustrated herewith. They will have 10 cross seats, 2 longitudinal and 3 stationary seats, giving a seating capacity of 32. The underframing will be entirely of steel, the main members consisting of 3-16 in. plates, 15 ins. deep, one on each side of the car, reinforced at the bottom with an angle. They are to be 33 ft. 4 ins. long, with a body length of 20 ft. 8 ins. They will be 8 ft. 2 ins. wide over the sheating. The centre aisle will be 1 ft. 11½ ins. wide, with cross seats on each side at 2 ft. 6½ ins. centres. The longitudinal seats at the forward end will be 2 ft. 4 ins. long, and at the rear end, 4 ft. 4½ ins. long, leaving the greater standing room at the rear end, where it is most required. The stationary cross seat at the forward end will be on the platform level, backing against the motorman's section. The latter will be separated from the exit path by a chain stretched across from the partition to the front vestibule end.



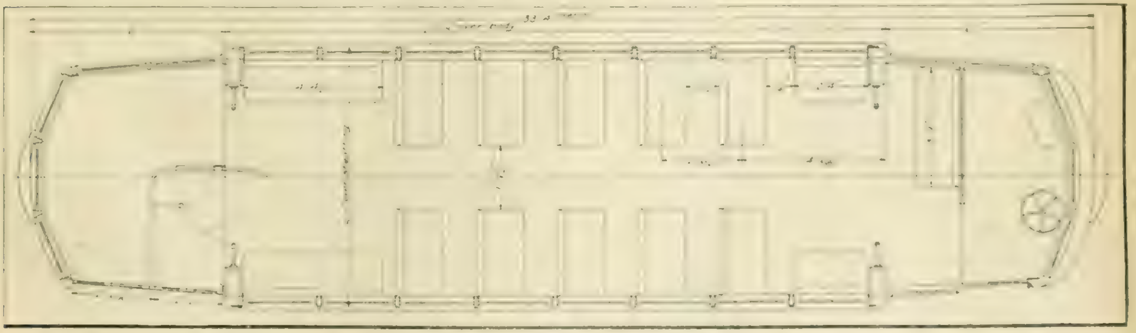
Steel Underframing of London Street Railway Cars.

In designing the steel frame, to which the Manager of the London St. Ry., C. B. King, has given special attention, it was the desire to obtain rigidity in the car posts in all directions, and, at the same time, make the vestibule supports so strong and rigid that there would be no possibility of the vestibule sagging. The possibility of collisions was borne in mind by giving the frame sufficient strength to resist either end or cross impact. The 6 in. I beams, together with the longitudinal angles and steel plates, are calculated to support the ends of the cars without sagging. The side steel plates are just high enough inside the car so that the end of the cross seats will fit over the steel plate, thereby providing a maximum amount of aisle space. The strong end sills, when securely fastened to the side plates and angles, will make it practically impossible for the side plates to become distorted. The intermediate cross channels offer a great deal of resistance in the event of side collisions, but, fearing this might not prove ample in that portion of the frame where the distance between the cross sills is greatest, diagonal braces are used for bracing the outside angles and the I beams.

The window posts are held in position by bolting them to angle irons rivetted to the outside of the side plates. These angle irons not only offer the maximum of support for the posts, but they make possible the use of a lighter section for the side plates.

As there will be no large timbers in the lower frame, such repairs as are necessitated from time to time can be made without removing the whole side of the car. With this steel frame, a large part of the repair work resulting from damages, may be made from underneath the car without requiring to touch the side of the car at all. However, in the event of a serious collision, when the side members of the car are seriously bent, it will still be necessary to remove the whole side of the car to straighten the injured members.

A maximum seating capacity was aimed at in the design, so that it may appear that the entrance and exit are somewhat crowded by the seats. As it is believed that these passage seats will not be used very much, this will minimize such an objection. The desire to utilize every available foot of space was responsible for the moving forward of the motorman's position as far as possible, making room for a seat for 3, and standing room for as many more on the front vestibule, which is of the same size as the rear vestibule.



Floor Plan of London Street Railway Cars.

Wages on Lethbridge Municipal Railway.

A new wage schedule went into effect on Lethbridge Municipal Ry. recently, as follows:—First 6 months, 25c. an hour; second 6 months, 28c. an hour; commencing 2nd year, 30c. an hour; commencing 3rd year, 32c. an hour; pay day to be on the 5th and 20th of each month.

All motormen and conductors are to be paid time and a half for the following public holidays:—New Year's Day, Good Friday, Victoria Day, Dominion Day, civic holiday, Labor Day, Christmas Day and Thanksgiving Day, and the pay for Sundays is on a basis of nine hours' pay for 7½ hours' work. Work after 24 o'clock to be paid for on time and a half basis.

Sherbrooke Railway and Power Companys' Annual Report.

Following are extracts from the report for the year ended June 30, submitted at the annual meeting in Montreal Sept. 22:

The business has continued to grow at a very satisfactory pace, and the gross earnings show an increase of $34,058.93, or nearly 37%, and the net earnings, including the income from real estate investments and after charging renewals show an increase of $19,080.09, or 58% over the preceding year. The increase in business was principally in the lighting and power branches of the company's system.

$32,000 of bonds and $32,000 of stock were issued and sold and the proceeds of the same expended in extensions and betterments. The full benefit, however, of these extensions will not be derived until the winter months.

While the increase in earnings has been large, it has not been up to expectations, as two of the company's largest consumers of power were unable to take their requirements as early as expected. One which had contracted for 500 h.p. has so far only taken 200 h.p. and this during a small part of the year. The other company, whose contract amounts to 700 h.p., expected to have its plant in operation in Oct., 1912, but on account of the late delivery of plant and machinery, only started to operate a portion of its plant in the month of June. Shortly afterwards, owing to an accident, the company's transformers were badly damaged, and being of special design they had to be shipped away for repairs. It is now expected that this plant will be in operation the latter part of October. If these contracts had come into operation during last year, the net earnings would have been increased by at least $12,500.00.

During the summer your directors have been successful in locating two large industries in Sherbrooke. Both will be large consumers of power, and the company has already entered into contracts with them for their entire power requirements. These two contracts, together with those referred to above, should increase the annual net revenue, when in operation, by over $21,750.00.

In regard to the light and power business in the districts controlled by your company, your directors beg to state that a very satisfactory rate of increase has been shown, especially in Lennoxville, Stanstead, Beebe Plain, Derby Line and Derby Centre. During the past year the company's lighting system has been extended to four villages, and the revenue from these villages is increasing at a steady rate.

The properties have been maintained in a proper state of efficiency, and a considerable amount of money has been spent in the upkeep of the tracks and rolling stock which has been charged to operating account. The power plant, electric light system and buildings are in excellent condition.

The company has decided, so as to have the highest operating efficiency on the street railway, to increase the wages of motormen and conductors during the coming year. The company has had no trouble in connection with its employes, but it has decided that this is a good policy to adopt so as to keep men as long as possible in the service.

Your directors have considered it advisable to insure all the company's properties against fire, accident and liability of all kinds. These public liability policies protect the company against accidents to the public from the power and distribution systems, and also against accidents to persons and vehicles on the street railway.

Your management feels confident that during the coming year the earnings, exclusive of the power contracts already referred to, will show satisfactory increases.

N. C. Pilcher,
General Manager, Sherbrooke Railway and Power Co.

The city of Sherbrooke continues to expand at a rapid rate. The continuance of building activity is very gratifying to note in spite of the financial stringency which Canada experienced during the past year. There is no question that if this condition had not existed all through the Dominion as well as the United States, several other U.S. manufacturers, who have been considering locating branches in Sherbrooke, would have commenced the construction of plants there this year.

Your directors take pleasure in expressing their appreciation of the services rendered by N. C. Pilcher, General Manager, and the officers and staff.

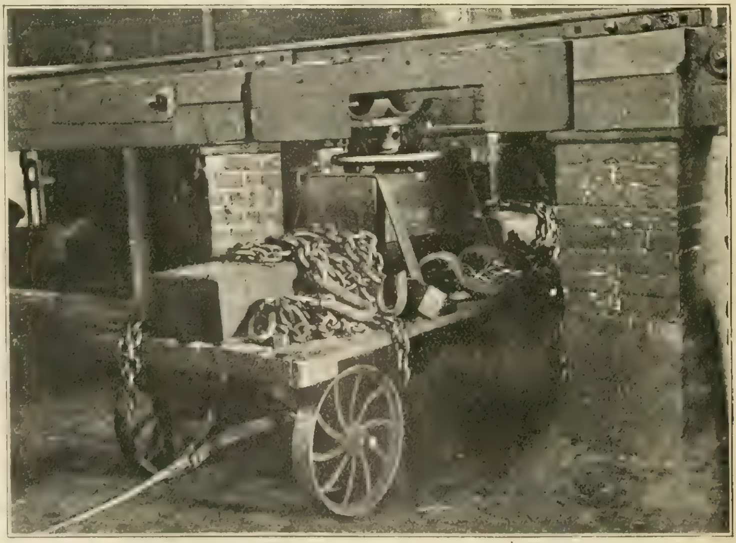
	1912	1913
Proportion of operating expenses to gross earnings	84.80%	77.22%
Proportion of net earnings to gross earnings	15.20%	22.78%
Car mileage	423,200	448,144
Gross earnings per car mile	10.143 cts.	10.746 cts.
Operating expenses per car mile	8.601 "	8.299 "
Net earnings per car mile	1.542 "	2.447 "
Passengers carried, including deadheads	1,064,003	1,115,038
Transfer passengers carried	197,988	220,869

The officers are:—President, C. J. McCuaig; Vice President, S. H. Ewing; Secretary-Treasurer, Grant Johnston; General Manager, N. C. Pilcher; Power Superintendent, J. B. Woodyatt.

Wheel Truck in Niagara, St. Catharines and Toronto Railway Shops.

The N., St. C. and T. Ry. shops at St. Catharines, W. Pay, Master Mechanic, are rather unique, the floor level being below the level of the surrounding ground at a depth equivalent to that of the depth of the usual repair pit, with all the machinery located on this lower level. The cars (there is room for two) enter at one end, and the rails are carried on heavy wooden beams supported on short brick piers, this track being along one wall, with an open space between the track and the other wall for the machinery and repair floor space. The fitting, repair and inspection of the cars is simply carried out from the same level as the shop floor.

A short section of each rail, with supporting timber, is removable for the dropping of the car wheels for turning, etc., the car being blocked up for this operation in the usual manner. For the removal of the wheels from under the car, a handy truck, shown in the accompanying illustration, is employed. This is of a familiar construction, with central hand power jack screws for lowering the wheels for removal to the wheel lathe or other repair point.



Wheel Truck, Niagara, St. Catharines and Toronto Ry. Shops.

The general shop design, with the floor on a level with the pit, should recommend itself to all who intend building a small

The Winnipeg River Power Company.

The Winnipeg River Power Co. has been incorporated under the Dominion Companies Act, with a capital of $1,000,000 and offices at Winnipeg, to develop water powers, and distribute electric energy. The provisional directors are E. Frith, C. W. Campbell, A. P. Scott, E. Beadle, R. Siderfin, Winnipeg. This company will undertake development work at the Big Bonnet falls of the Winnipeg River, the rights to which were originally held by C. W. Chamberlain, for Chicago people, and subsequently came under the control of R. R. Muir, by whom they were assigned to Sir William Whyte, the assignment being filed at Ottawa, Oct. 26.

We are officially advised that the Winnipeg Electric Ry. will take the full output of the plant, which will be installed at these falls, and operated by the subsidiary company above named. The distance from the W.E.R. Co's. present plant to the proposed new plant is about 12 miles. The Big Bonnet falls are estimated to be capable of providing from 80,000 to 100,000 h.p. It is the intention of the subsidiary company to start development work at once, and a late press report states that a contract has been let to J. G. White and Co., Inc., New York city, for the work.

The Toronto and York Radial Railway North Toronto Diversion.

The Judicial Committee of the Imperial Privy Council has dismissed the Toronto and York Radial Ry. Co.'s appeal against the judgment of the Ontario Court of Appeal in favor of the City of Toronto, in the matter of the proposed diversion of the line off Yonge St., in North Toronto.

On June 17, the Ontario Railway and Municipal Board made an order authorizing the Metropolitan Ry., one of the component companies of the T. & Y. R. R. Co., to deviate its line from Yonge St. to a private right of way from Farnham Ave. to a new terminal 800 ft. west, and north of the C.P.R. The location of the proposed deviation showed the crossing of several streets on the level, and the speed of cars was limited to six miles an hour, the Board holding that it was not reasonable to compel the line with its earnings, to spend $500,000 in grade separation, more especially as the municipalities refused to contribute anything. The company commenced clearing part of the site, July 1, and about the same time the city notified the company of its intention to appeal against the order.

The city's appeal was dealt with by the Court of Appeal in February, and was allowed, upon which the City Council took steps to stop the construction of the deviation, which was then about half completed. The company then entered an appeal to the Judicial Committee of the Privy Council, which, upon hearing the appellant company's case did not think it necessary to call on the city to reply, and eventually dismissed the appeal.

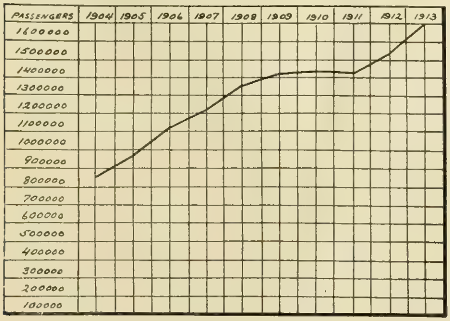
H. G. Matthews,
General Manager, Quebec Railway, Heat and Power Co.

Quebec Railway Light, Heat and Power Company's Annual Report.

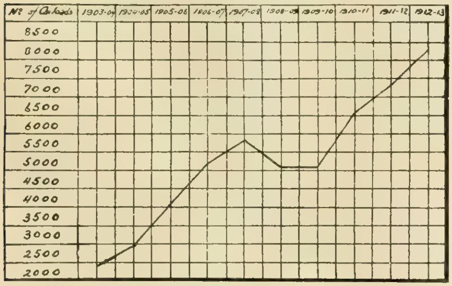
Following are extracts from the report for the year ended June 30, presented at the annual meeting, Sept. 9:—

The gross earnings from operation were $1,524,200.71, compared with $1,415,825.38 in 1912. Adding miscellaneous income of $236,881.78, makes a total revenue from all sources of $1,761,082.49, an increase of $150,672.65. The operating and maintenance expenses were $895,180.61, against $734,925.35. The fixed charges and taxes of all kinds were $792,100.17, leaving a net surplus of $73,801.71, which added to last year's one leaves a total surplus to date of $147,341.16. $27,641.60 was received from the Dominion Government on account of subsidies. This has been applied to the cancellation of $30,000 bonds according to the trust agreements.

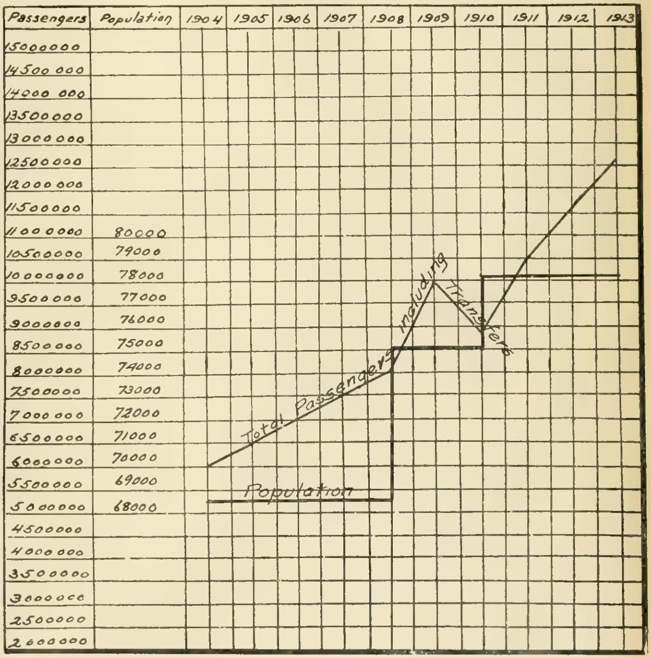
The officers are:—President, Sir Rodolphe Forget; Vice President, L. G. Webster; General Manager, H. G. Matthews; Treasurer and Comptroller, W. J. Lynch; Secretary, P. Hamel.



Car Loads of Freight Hauled on Montmorency Division, Quebec Railway, Light and Power Co.



Passengers Carried on Montmorency Division, Quebec Railway, Light and Power Co.



City Division, Quebec Railway, Light and Power Co. Passengers Carried, Including Transfers; Also Population.

The Ontario West Shore Railway Muddle.

Prior to 1906, certain persons in Goderich procured a charter for an electric railway to run through various parts of Huron and adjoining counties. They tried for some time to float the company, without success. In 1906, they got in contact with J. W. Moyes, of Toronto, who is said to have represented that he was an expert in electric railway matters; that he had built and operated the Metropolitan Ry. from Toronto up Yonge St., and that he was in a position to finance the road. He undertook to do so, and as part of his scheme he outlined the building of a dam across the Maitland River for the purpose of securing power, not only to operate the railway, but to supply Goderich, Clinton and other municipalities with electricity. He first decided to make a start by building a line from Goderich to Kincardine. He applied to the towns of Goderich and Kincardine and the townships of Colborne, Ashfield and Huron to guarantee the railway company's bonds. Four of the corporations passed bylaws, but the bylaw in Colborne township was defeated. The town of Goderich guaranteed bonds for $150,000, payable in 30 years, with interest at 5 per cent., Kincardine $50,000; Huron $75,000, and Ashfield $125,000, a total of $400,000. A trust company was appointed to act as trustee, and a mortgage was executed as security for the guaranteed bonds, and also unguaranteed bonds to the extent of $200,000, which was the total amount that the 33 miles from Goderich to Kincardine could be mortaged for. The guaranteed bonds realized about $385,000. The work was proceeded with, and all of the funds realized from the guaranteed bonds were paid out, with the exception of about $30,000. The railway company claims, and the certificates of the engineer show, that $639,000 was expended.

The building of the road started in Colborne Township, just outside of Goderich, and the right of way was purchased from the farmers whose land fronted on the east side of the highway. Certain construction was done, and the road was said to be completed to Kintail, about 16 miles. No ballasting was done, but the road was considered safe for construction trains travelling over the 16 miles. From Kintail to Amberley, about 6 miles, grading was done, and the road was ready for the rails, which were placed along the side of the highway, but nothing further was done. From Amberley for several miles towards Kincardine rails were placed along the side of the road and still remain there; no work whatever was done. The work referred to was all done by The Huron Construction Co., which is said to be owned by Mr. Moyes, who promoted the railway, in fact it is said that he owned both concerns.

For the first two or three years the interest on the guaranteed bonds was paid. The last three payments have been made by the corporations guaranteeing them. There is, apparently, no chance of Mr. Moyes completing the road, and it looks as if the corporations would be obliged to complete it or lose their investment. The $200,000 of unguaranteed bonds are said to be held by a banking institution which advanced, so Mr. Moyes claims, certain monies to him. The corporations are, naturally, very much dissatisfied, and want to know what became of their money. They employed H. W. Middlemist, Engineer of the Ontario Railway and Municipal Board, to go over the road and make an estimate. His report claims that not more than $260,000 has been expended and that it will take several hundreds of thousands of dollars to complete the road. If his report is accurate, then it is quite clear that there is something radically wrong in the reports furnished by the engineer in charge, and on whose certificates the money was paid out by the trust company. Mr. Moyes claims that the reason why he was not able to go on with his schemes is because of the appearance of the Hydro-Electric Commission on the scene, and the probability of it taking over his water power; and further, that owing to this it was impossible for him to finance the power scheme. No matter how the result has been brought about, the municipalities have been placed in a most unfortunate position. The Ontario Railway and Municipal Board, at the instance of the municipalities, started an investigation, some time ago, but it was blocked by failure to procure Mr. Moyes' attendance. All of the books and papers which should be in the company's office at Goderich were, it is said, sent to him. The only evidence given was that of the engineer. He had no books or papers, and the examination was adjourned to get Mr. Moyes and also to enable the engineer to make up statements. A subpoena was issued for Mr. Moyes on Sept. 25, but at the end of October the Sheriff of Toronto wrote the solicitor who is acting for the municipalities interested, that he had been unable to serve it, although he had every available bailiff employed and had had officers who knew him personally wait outside his house in Toronto for several hours on different days. The Sheriff added that he was of the opinion that Mr. Moyes was evading service. Early in November, however, he was located and service effected. Mr. Moyes has recently been employed by the City of Toronto as one of the "experts" to report on the projected purchase of the Toronto Ry.

Mr. Moyes appeared before the Board for examination during the third week in October, but practically no information of any value was elicited from him, and up to the time of writing this it has not been possible to obtain the company's books, papers, etc.

The Electric Railway Situation in Montreal.

The question of the extension of the Montreal Tramway Co.'s lines throughout the city, continues to be a live one. After several lengthened discussions, G. Janin City Engineer, submitted to the Board of Control, Nov. 5, a map showing the extensions which they considered necessary in order to relieve congestion, and to give accommodation to the outlying parts of the city. The principal extensions suggested are in the northeast of the city; the extensions being divided into two classes, those most important, and those less necessary. This report was referred back to the two engineers for further consideration, and a recommendation as to the minimum which would satisfy requirements. It was stated that the lines asked for would involve the construction of 14 subways and overhead bridges, and would cost at least $3,500,000.

E. A. Robert, President M. T. Co., in a letter to the city council, subsequently pointed out that it was useless to consider all the demands of the city for new lines in the outlying territory, until better facilities were secured in the down town areas. The new lines would only make the present congestion worse.

A further report was submitted to the Board of Control, Nov. 7, by G. R. MacLeod, and approved by G. Janin, showing the lines urgently required, and those which should be discussed with a view to future requirements.

The City Council has requested the Board of Control to ask the company for suggestions as to the best way of relieving the congestion in the centre of the city, and it is said that the company has suggested the construction of an underground line along the whole of St. Catherine St., and an underground line from Bonaventure Station to the Courthouse, thence northerly along either Bleury or St. Lawrence St.

On Nov. 11, the City Council referred all the plans and reports back to the Board of Control with a request that the negotiations be gone on with, so that the basis of an agreement for the solution of the whole matter may be reached.

A Montreal press dispatch of Nov. 18 says that the Canadian Autobus Co. has intimated that it is prepared to build underground lines to serve both the down town and up town districts.

The formal offer of the company was laid before the city Nov. 14. The letter of G. A. Robert, President, points out that "as a transportation problem is so intimately bound up with general traffic requirements of this city, both pedestrian and vehicular, some means must be devised for giving more facilities for three classes of traffic." The agreement, the company suggests, would provide for:—a 40 year franchise; a new avenue between Place Viger and Victoria Square or Windsor Station; a boulevard from Craig St. to Mount Royal or Van Horne Avenue on Back River; subways under steam railway tracks and Lachine Canal at two points; subway from Craig St. to Mount Royal or Van Horne Ave., between Bleury and St. Denis Streets; subway east and west, probably under St. Catherine St.; subway under Notre Dame or St. James St., between Courthouse and Victoria Square or from Hochelaga to Victoria Square; motor bus service on Sherbrooke St.; the widening of Vitre St. from St. Denis to Bleury Street or Victoria Square. The company will agree to pay half interest and sinking funds after the foregoing works are completed; the city to guarantee the mortgage securities to be issued by the company for building subway system; two experts to be appointed to decide as to the location of subways; the right to operate a freight service at night to be conceded; the company will pay to the city 4% on all gross traffic earnings on the surface lines.

London St. Ry. and Hydro Electric Power.—A London, Ont., press dispatch of Nov. 14 says:—The contract between the Water Commission of London and the London St. Ry. for the purchase of hydro electric power at $36 per horsepower has been received in the city after having been signed by President Everett, of Cleveland, for the railway company. The city will install a rotary converter and supply direct current power, the company having the privilege of a flat rate or a meter rate, both based on peak load. The company will take a minimum of 1,000 h.p., and this will reduce the cost of the power to the city. Further reductions in the cost will be shared by the company, and the agreement will run to the end of the franchise in 1925.

Sandwich, Windsor and Amherstburg Ry.—A press dispatch from Windsor, Ont., recently, stated that the city council had taken up the question of buying out this company, so as to prevent competition with the municipal hydro electric system. We are officially advised that the matter has not been taken up with the company in any way.

The Board of Railway Commissioners has approved the Montreal and Southern Counties Ry. standard tariff of maximum passenger fares on the basis of 2½c. a mile between stations south of the St. Lawrence River.

The Proposed Purchase of the Toronto Railway.

The main points covered by the reports on the proposal for the acquirement of the Toronto Ry. and the Toronto Electric Light Co., as prepared by B. J. Arnold, Chicago, Ill., and also signed by J. W. Moyes, Toronto, in regard to the Toronto Ry., and as prepared by R. A. Ross, Montreal, in regard to the Toronto Electric Light Co., were dealt with in Canadian Railway and Marine World for November. Since these reports have been received, the matter has on various occasions come before the City Council, but no definite steps were taken, as it had been decided to have reports from John Mackay, chartered accountant, Toronto, as to the commercial value of the scheme, and from H. H. Couzens, General Manager, Toronto Hydro Electric System, as to what extent the T.E.L. Co.'s plant might with advantage be incorporated with that of the city. At the council meeting, Nov. 11, these latter reports not having been received, it was, after some discussion, decided to instruct the Corporation Counsel to draft an agreement for purchase on the lines of the reports presented and the correspondence connected with them, such draft agreement to be submitted to the President of the Toronto Ry. Co., the Ontario Government, and the Ontario Hydro Electric Commission, for approval, so that the result may be reported to the council by Dec. 8, in order that the by-law may be submitted to the ratepayers on Jan. 1, and in the event of the agreement not being submitted in time, a synopsis be prepared for submission to the ratepayers instead.

Since that meeting, John Mackay's report has been received. In regard to the proposal regarding the Toronto Ry., the report states that making allowance for all charges and the construction of an enlarged system of 283 miles in 1921, with corresponding increases in car capacity, etc., and operated as a single system on a single fare basis, the net annual surpluses, after paying the city upwards of $13,000,000 in respect of traffic receipts, to which it is entitled under the agreement with the Toronto Ry., should amount to approximately $11,500,000 by Sept. 1, 1921. On a stationary traffic from 1921, the net receipts should, after bearing all charges and paying $2,300,000 a year into the city treasury in continuation of the existing arrangement with the company, leave a surplus of over $2,000,000 a year. This surplus could be applied to the reduction of fares to 3 1-3c. Failing the completion of purchase, the net loss on the existing civic car system, together with additional losses involved in adequate extensions, will amount, excluding the provision for sinking funds, to about $3,750,000.

The proposals, if carried out, involve the immediate expenditure of $30,000,000 and the obligation to expend additional capital in large amounts from time to time. The purchase price of the railway properties has been fixed at $22,000,000, and the physical assets have been valued at a little over $10,000,000, leaving something less than $12,000,000 as applicable to the franchise rights that would be surrendered to the city. The principal franchise, that of the Toronto Ry., expires Sept. 1, 1921, and others of the radial lines proposed to be dealt with, in 1921 and 1929, subject to varying terms of renewal. The purchase price of the Toronto Electric Light Co. has been fixed at $8,000,000, and the physical assets have been valued at $6,045,000, leaving $1,955,000 as the price payable for the surrender of the company's franchise rights, which are practically perpetual.

After having gone most carefully through all the intricacies of the proposed deal, Mr. Mackay has no hesitation in declaring his full confidence as to the outcome, provided the basic conditions as outlined are observed by those concerned.

London and Port Stanley Railway Electrification.

At a meeting of the London, Ont., City Council, Nov. 17, resolutions were passed finally passing the bylaw for the electrification of the line from London to Port Stanley; providing for the appointment of a commission to supervise the expenditure of the $750,000 voted; and instructing the mayor to vote on behalf of the city in favor of the lease of the line by the city council, at the special meeting of the shareholders to be held Dec. 9.

In an interview, Nov. 5, Mayor Graham is reported to have said he had just returned from Detroit, Mich., where he had had conferences with officials of the Michigan Central Rd. and the Pere Marquette Rd. The latter, he said, would submit an offer for operating over the line from the expiration of its present lease until the electrification was completed. If an arrangement could not be made with the P. M. Rd., the M. C. Rd. would be prepared to operate the line.

The plans for the electrification are practically completed and will be submitted to the Board of Railway Commissioners for approval at an early date.

Electric Railway Finance, Meetings, Etc.

British Columbia Electric Ry. and allied companies.—Gross earnings for September, $734,283; operating expenses, maintenance, etc., $560,888; net earnings, $173,395, against $688,069 gross earnings; $483,562 operating expenses, maintenance, etc.; $204,507 net earnings, for Sept., 1912. Aggregate gross earnings for three months ended Sept. 30, $2,260,854; net earnings, $583,478, against $2,013,586 aggregate gross earnings; $581-406 net earnings for same period, 1912.

British Columbia Electric Ry.—The Vancouver City Council has asked the company to state on what basis it would be willing to dispose of the car lines in the city, and it is said that on receipt of the statement of terms a vote of the ratepayers will be asked on the general question of purchase. The city council has authorized the City Comptroller to arrange for an audit of the company's books to ascertain the amount of cash taken in by the company on which the city receives a percentage.

Cape Breton Electric Co.—Gross earnings for September, $32,515.62; operating expenses and taxes, $16,955.73; net earnings, $15,559.89; interest charges, $4,891.66; balance, $10,668.23; bond sinking and improvement funds, $1,190; net balance, $9,478.23, against $34,363.62 gross earnings; $15,777.26 operating expenses and taxes; $18,586.36 net earnings; $4,495.84 interest charges; $14,090.52 balance; $1,206.66 bond sinking and improvement funds; $12,883.86 net balance for Sept., 1912.

Halifax Electric Tramways Co.—The Nova Scotia Public Utilities Commission, Nov. 7, authorized the company to issue 6,000 shares of ordinary stock at par. The additional capital is to be devoted to the retirement of certain bonds, and in extending and improving the system.

London and Lake Erie Ry. and Transportation Co.—In the course of a discussion at a recent meeting of a committee of the St. Thomas, Ont., City Council, W. N. Warburton, General Manager, is reported to have stated that the time is not far distant when the company's head offices will be transferred from London to St. Thomas, that the dispatching is already being done from St. Thomas, and that the General Manager and his staff will be located there We have been officially advised that Mr. Warburton made no such statements.

London St. Ry.—Gross earnings for September, $31,547.30; expenses $19,988.56; net earnings $11,558.74; deductions $2,380.40; net income $9,178.34, against $29,541.07 gross earnings; $17,656.01 expenses; $11,885.06 net earnings; $2,371.25 deductions; $9,513.81 net income for Sept., 1912. Aggregate gross earnings for nine months ended Sept. 30, $248,349.74; expenses $174,493.51; net earnings $73,631.23; deductions $21,807.24; net income $51,823.99, against $227,106.36 aggregate gross earnings; $155,941.21 expenses; $71,165.15 [illegible] earnings; $21,639.75 deductions; $49,525.40 net income for the period 1912.

Nelson Street Ry.—A press dispatch from Nelson, B.C., says that at a conference between the city council and the company's directors municipal operation of the street railway, with the stockholders retaining their interest in it on a proportionate partnership basis was decided on. Reorganization of the company involves increasing the capital from 50,000 shares to 75,000 shares in order that the city may be given 40,000 shares, by which it will have control. The city will issue bonds to pay off the company's debt and provide working capital.

Quebec Ry., Light, Heat and Power Co.—Supplemental letters patent under the Dominion Companies Acts, dated Nov. 6, authorize the company to enter into any agreements relating to any corporation whose capital stock is owned or controlled by or for the Q. R. L. H. and P. Co., "and relating to acts, steps and things to be done or taken or agreed to or assented to by any such corporation, and relating to or respecting the undertakings, contracts, stocks, securities, liabilities, bonds, mortgages, charges, assets, operations, revenues and profits of any such corporation, whether such agreements, undertakings, guarantees and arrangements may be entered into with such corporation itself or otherwise."

Saskatoon Municipal Ry.—Receipts for Oct. were $12,336.20, an increase of $972.63 over the previous month. Details of the receipts show, cash $4,349.30; tickets $7,792.55; advertising $81; police $17.50; postmen $41.65; chartered cars $15; miscellaneous $69.20. The mileage operated was 58,858; traffic receipts per car mile, a little over 21c.; operating expenses per car mile, 25.3c.; number of passengers carried per car mile, 4.6; wages $7,409.65; interest on capital expenditure $2,083; sinking fund, $743.

St. Thomas, (Ont.) Electric Ry.—It was reported to the committee having charge of the line, Nov. 3, that the present bonded indebtedness is $85,000, and that since the City took over the line from the company nearly $250,000, including the purchase price, has been laid out upon it.

Toronto Ry., Toronto and York Radial Ry. and allied companies.—Gross earnings for September, $865,796; operating expenses, maintenance, etc., $411,159; net earnings, $454,637, against $767,944 gross earnings; $404,171 operating expenses, maintenance, etc.; $363,773 net earnings for Sept., 1912. Aggregate gross earnings for nine months ended Sept. 30, $7,183,470; net earnings, $3,553,004, against $6,221,044 aggregate gross earnings; $3,185,100 net earnings, for same period, 1912.

Winnipeg Electric Ry.—Gross earnings for September, $331,732; operating expenses, $181,652; net earnings, $150,080, against $309,722 gross earnings; $162,870 operating expenses; $146,852 net earnings for Sept.,

1912. Aggregate gross earnings for nine months ended Sept. 30, $2,981,434; net earnings, $1,336,374, against $2,737,552 aggregate gross earnings; $1,280,748 net earnings for same period, 1912.

The Montreal Tramways Company's Fares, Service, Etc., in Mount Royal Ward.

Peter Murphy, of Mount Royal Ward, Montreal, complained some little time since to the Quebec Public Utilities Commission, of an increase in fares charged by the company in that ward, which was formerly Notre Dame des Neiges municipality; also charging discrimination as compared with other sections of the city. The matter was referred to the President of the Commission, who, with F. C. Laberge, M. Can. Soc. C.E., another member of the Commission, heard the matter on November 7. The company filed an exception to the Commission's jurisdiction. The change in fares complained of by Mr. Murphy was the abandonment of the practice of selling 6 tickets for 25c and the putting in force of a cash fare.. It was shown that on Feb. 20, 1911, the Board of Railway Commissioners for Canada made an order governing the fares to be charged upon the Montreal Park and Island Ry., and authorizing the cash fare mentioned, but President Hibbard held that that order had ceased to be in effect as the Board of Railway Commissioners had ceased to have any jurisdiction over the Montreal Park and Island Ry, which is now a part of the Montreal Tramways Co.'s system. He therefore recommended as follows:—

That an order be issued directing the city of Montreal and the Montreal Tramways Co. to show cause why the commission should not consider and for the interest and convenience of the public require the extension of the railway from the present authorized limit of the Guy St. and Cote des Neiges line to such point within the limits of Mount Royal Ward as will be of convenient access to persons living in that ward and its immediate vicinity, as a means of reaching the central portions of the city, subject to such reasonable conditions as to right of way, construction, operation and rates as may be provided in the contract between the city and the company, or it may be within the jurisdiction of the commission to direct:

That the question of rates or tolls to be charged be not finally disposed of until such time as any questions arising upon the foregoing order are dealt with; that in the meantime the company be directed to restore the issue of 6 tickets for 25c. (the cash fare of 5c. to be still optional with passengers), children's tickets and other matters affecting tolls and transfers as were in effect before the adoption of the uniform 5c. cash fare now being required to be paid.

The commission subsequently passed an order carrying out the President's suggestions.

Fares on Saskatoon Municipal Ry.—In response to a request from workmen, limited tickets are now being issued at [illegible] for 25c., available only between 6 and 8 a.m. Other tickets are sold as follows:—Regular tickets, 6 for 25c., available at all hours; school tickets, for children under 14, 8 for 25c., available 8 a.m. to 5 p.m.; children's tickets, for children under 12, 8 for 25c., available at all hours. The cash fare is 5c.

The Montreal and Southern Counties Ry. is reported to be in the market for 12 cars, 57 ft. long, or 7 ft. longer than those at present in service, and with through platforms. It is said they are to be of the multiple unit, single control type, with toilet accommodation. It is also stated that some baggage cars are required.

Electric Railway Projects, Construction, Betterments, Etc.

Alberta Metropolitan Ry.—A meeting of shareholders was held at Calgary, Alta., Nov. 5, to elect directors, authorize the issue of capital stock, and approve of contracts for the construction of the projected railway. W. J. C. Madden, 114 Ninth Ave. E., Calgary, was chairman of the provisional directorate. The company was incorporated by the Alberta Legislature in 1912, to build a railway from Calgary to Shepard, Alta., to arrange with other companies for the operation of the line, and to lay out amusement parks.

Berlin and Northern Ry.—Press reports state that a contract has been let for the elimination of a curve on the existing line, and that the work includes the building of a 1,300 ft. culvert, and abutments. (May, pg. 235.)

Brandon Municipal Ry.—We are officially advised that a report is being prepared for submission to the City Council of Brandon, Man., respecting extensions to the line which it may be necessary to make in 1914. The principal extension talked of is one of four miles to the Experimental Farm, the Industrial School and Lake Percy. The city is to get a park from the farm and school around Lake Percy, on condition that a line be built to it. The land required for the park will be surveyed as soon as the river and the lake freeze over, and then the agreement will be discussed and definitely decided upon. J. Antonisen, Brandon, is Superintendent. (Aug. pg. 395.)

British Columbia Electric Ry.—The building of an extension from Boundary Road, along Hastings St., Vancouver, for two miles, was expected to be completed by Dec. 1.

Plans have been approved for the building of a line on 43rd Ave., South Vancouver, from Bridge St. to Main St., and it is said that construction will be started early in 1914. This is an extension of the new line from Kerrisdale to Point Grey.

Work has been started on the construction of the station at the south end of Granville St., as a terminal for the Lulu Island line. The substructure, consisting of heavy pile and timber work supporting the platform on the level of the bridge, was built during the summer. The contract for the superstructure has been let to Campbell Bros., and it is expected that the station will be completed early in 1914. The platform on which the station is to be built is 188 by 140 ft., and the station building will be 115 by 30 ft. It will contain waiting rooms, refreshment room, and offices for the operating staff. There will be five tracks to accommodate the regular traffic and to provide storage for cars, etc. The cost of the building is estimated at $40,000.

We are officially advised that Westinghouse, Church, Kerr and Co., have been engaged to act as consulting engineers in connection with the erection of the double deck car barn in Vancouver, a description of which was given on pg. 542 of our November issue. This barn is estimated to cost $330,000, and will give accommodation for 120 cars. The same firm is also acting as consulting engineers in connection with the erection of new shops in Burnaby municipality on the easter boundary of Vancouver, which will probably cost about $250,000. Their construction work will probably be started early in 1914. Plans are being prepared.

Tenders are under consideration for the construction of an interlocking signal tower at the crossing of the Esquimalt and Nanaimo Ry. on Esquimalt Road. (Nov., pg. 544.)

Calgary Municipal Ry.—The ratepayers of Calgary, Alta., by a considerable majority have refused to approve of an arrangement for taking over a line to Shaganappi Park, which it was proposed to build privately, and hand over to the city for operation, the promoters guaranteeing the cost of operation for a short term. As a result of the vote the City Commissioners, Nov. 7, recommended the City Council to pass a resolution providing that in the future the City shall not entertain any proposition from private individuals to establish public utilities within the City limits.

Press reports state that the City Council has under consideration plans for extending the municipally owned electric railway, totalling over four miles. (Oct. pg. 494.)

Cape Breton Electric Co.—Press reports state that among the new work proposed to be carried out during 1914, is the building of a new substation at Reserve Jct., N.S., and an addition to the machine shops. (July, pg. 344.)

Dominion Power and Transmission Co.—It was reported in Hamilton, Nov. 13, that the directors had decided to undertake the immediate construction of a steam auxiliary plant at an estimated cost of $1,000,000. We have since been officially advised that designs are being prepared for a steam supplementary plant of a capacity of 6-10,000 k. w. turbine, of which capacity the company is now engaged in developing two of the units. The plant will be equipped with water tube boilers for 200 lbs. pressure with 160 degrees of superheat. The plant is designed on the unit plan. Work will be proceeded with as rapidly as possible, and it is expected to have the first units in operation within a year. The plant is not designed merely for emergent or peak use, but is intended to be operated continuously. (Nov., pg. 544.)

An official is reported recently as stating at Brantford, that there is no intention of extending the line westerly from that town, but that a branch line will be built to Galt. The right of way for this branch has been purchased, and it is possible that construction will be undertaken in 1914. There is, he added, absolutely no foundation for the press reports that the present line from Hamilton to Brantford will be made into a double track one. The traffic between the two points will not warrant a second track for some years to come. (Nov., pg. 544.)

Dunnville, Wellandport and Beamsville Electric Ry.—A bonus has been voted in aid of the building of this electric railway by Gainsboro township, and press reports state that bonds are being sold to provide for the building of the line from Dunnville to St. Anne, Ont. (Oct., pg. 494.)

The Edmonton Interurban Ry. has built a single track line from the city boundary of Edmonton, Alta., to St. Albert, about 5 miles, and has been operating a self-propelled gasoline electric car between the two termini three times a day, but it has had no connection with the Edmonton Radial Ry., which is operated by the city. On Nov. 6 an agreement was entered into between the company and the city and we were subsequently officially advised that the 1.5 miles of track to give connection between the city lines and the company's southern terminal were expected to be completed by Nov. 20, when a through service between Edmonton and St. Albert was to be started. It is said that the company has ordered three more cars in England. The car already in use is equipped with the Hele-Shaw system of transmission, which consists of oil motors and fittings. H. Warner, Edmonton, is Chief Engineer. (Nov., pg. 544.)

It is reported that the company will soon begin the construction of a carhouse on Algonquin Ave., Edmonton.

Estevan Transit and Power Co.—Application is being made to the Saskatchewan Legislature for the incorporation of a company with this title to develop power, and in connection therewith to build railways from the s. w. ¼ of sec. 13, tp. 2, range 8, west of the 2nd meridian, near the crossing of the Canadian Northern Ry. by the C.P.R., along the Government road allowance, and by a fully described route to sec. 11, and along the south side of the Souris River valley, to the road allowance between sections 11 and 12. The provisional directors named in the application are H. J. McNeil, W. J. Perkins, E. C. Hillborn, D. C. Dunbar, Estevan, Sask.

Forest Hill Electric Ry.—Application has been made to the Ontario Railway and Municipal Board for sanction to proceed with the construction of the projected line north of Toronto. (Sept., pg. 442.)

Frontier Electric Ry.—Press reports state that it is not proposed to start construction of this projected three track railway from Buffalo to Niagara Falls, N.Y., until the spring. J. S. Simmons, Niagara Falls, N.Y., is Vice President.

Imperial Traction Co.—Press reports state that it is proposed to begin construction early in the spring on the proposed lines from Bridgeburg to Smithville, and from Hamilton to Toronto, and that a connection will be provided between Smithville and Hamilton. (July, pg. 344.)

Kingston, Portsmouth and Cataraqui Elec. Ry.—Press reports state that a second track is to be laid on Princess St., Kingston, Ont., during next summer. (Apl. pg. 185.)

We have been officially advised that it is the company's intention to lay a second track on portions of King and Princess Streets in the early spring, provided the city is in a position to undertake the paving of the same, and that on the completion of the second track the company will operate a limited ten minute service all the year round.

London, Grand Bend and Stratford Ry.—C. J. McAllister in an interview at London, Ont., Nov. 4, is reported as stating that surveys had been completed and application was being made to the several municipalities through which the line would pass, for franchises. The lines for the building of which arrangements are said to be being made are:—From London to Grand Bend, via Hyde Park and Parkhill; and from Grand Bend via Exeter to Stratford. The line may eventually be carried on to Berlin. (Oct., pg. 494.)

London St. Ry.—A conference between the company's officials and the London, Ont., City Council, was held Nov. 8, on the condition of the lines in the city. The Council is desirous that cars be run on Sundays, but T. H. Smallman, Vice President, stated that the company would not pay a cent or grant anything in the way of concessions for the privilege of running cars on Sunday. The City Engineer had presented a report suggesting new routes, additional lines, additional cars, and some concessions as to fares. The company will consider this report and make suggestions thereon.

An agreement was reached Nov. 3, under which it is said that the company will take a minimum of 1,000 h. p. from the Hydro-Electric Commission. The price is $36 per h. p., and the contract is to run for twelve years from Dec. 15. (July, pg. 344.)

Medicine Hat Tramways, Ltd.—Application was made to a court at Calgary, Alta., Nov. 21, by E. G. Fagan, of Medicine Hat, for an order quashing the resolution of the council granting an extension of time to the Montreal Engineering Co. for the construction of an electric railway in the city. (Nov., pg. 544.)

Moncton Tramways, Electric and Gas Co.—Press reports state that it is not intended to extend the line to Sunny Brae, N. B., via. Church St., Moncton, until early in 1914. (Feb. pg. 90.)

Montreal and Southern Counties Ry.—We are officially advised that contracts have been let as stated in our last issue for the building of a bridge across the Yamaska River, and the extension of the line through Granby, Que. In connection with this line a route map from St. Cesaire to Granby, 14.5 miles, has been approved by the Board of Railway Commissioners. We are further advised that a contract has been let to A. F. Byers & Co., for the building of a sub power station, and a passenger station at Rougemont, and that they have started the work. (Nov. pg. 544.)

Moose Jaw Electric Ry.—The South Hill belt line has been completed and was put in operation Nov. 8. (July, pg. 344.)

Niagara Gorge Rd.—Press reports state that the company is preparing to erect additional car houses at Niagara Falls, N.Y.

Niagara, St. Catharines and Toronto Ry.—Plans are being prepared for a passenger station and freight house at Niagara-on-the-Lake, the terminal of the recently completed 11 mile branch from St. Catharines, Ont. (Nov., pg. 544.)

Port Arthur and Fort William Electric Ry.—Tenders are under consideration for a brick addition 260 by 30 ft. to the Walsh St. car barn, Fort William.

The only work necessary for the completion of the line to the industrial plants on Island no. 2, Fort William, is the building of 100 ft. of trestle work on the island side of the bascule bridge. This is being put up by the C. P. R., and is expected to be completed by the end of the year, when the extension will be put in operation. (Nov., pg. 544.)

Regina Municipal Ry.—We are officially advised that it has been decided to postpone the building of the line into the C. P. R. annex, Regina, Sask., until the spring. The extension on Young St., to the new power house has been completed. During the construction season now completed there have been built and reconstructed 21 miles of single track. This includes about 11 miles of paved single track. The approximate expenditure on this was about $550,000. H. Doughty is Superintendent. (Nov., pg. 544.)

Prince Albert, Sask.—At a meeting of the Prince Albert, Sask., Board of Trade, Oct. 30, a resolution was passed urging the City Council to grant a franchise for an electric railway in the city, to a company. It is said that a proposal will be submitted to the City Council at an early date.

Quebec and Island of Orleans Ry.—Application is being made to the Quebec Legislature to authorize an extension of the projected lines connecting with the Isle of Orleans, from Quebec to Montreal, as far as possible along the north shore of the St. Lawrence River. G. Maillet, Quebec, is Secretary. (May, 1911, pg. 455.)

St. John Ry.—Rapid progress has been made with the extension to the One Mile House and to Kane's Corner, on the extension of the St. John, N.B., Ry. Track has been laid to One Mile House, part of the line ballasted, and part of the overhead work completed. It is expected to have the extension in operation early in December. An arrangement has been made with the City Council providing for a further extension from Kane's Corner, along the Marsh Road. (Nov., pg. 544.)

St. Thomas Street Ry.—The City Engineer was instructed by the St. Thomas City Council, Nov. 3, to prepare an estimate for putting the line throughout into proper condition, and for the laying of a second track upon Talbot St. (July, pg. 345.)

Sudbury, Copper Cliff Suburban Electric Ry.—A bylaw has been passed by the Town Council of Sudbury, Ont., granting a franchise to the company for the building of a street railway, to be operated by any power except steam, on the following streets and avenues: Regent, Lorne, Elm, Durham, Monk, College, Kathleen, Teetman, Morin, Notre Dame, Lisgar, Larch, Cedar, Station, Nelson, John, Elizabeth, McNaughton, and Annie. By consent other streets may be substituted; rights on the streets may be granted to other street railway companies, and the company may utilize a private right of way connecting with the lines on the streets. The agreement also contains sections as to the class of cars to be provided, and provides for the making of regulations as to the operation of the same. (Nov. pg. 545.)

Three Rivers Tramway Co.—Press reports state that the proposed electric railway from Three Rivers to Berthier and Portneuf, Que., is again under consideration, with a view of construction being started in 1914. (Aug. pg. 395.)

Toronto Suburban Ry.—Construction on the line from Lambton Mills to Guelph, Ont., has practically been closed down for the season. The grading is almost finished into Guelph, and nearly all the ties have been delivered at Cooksville, where they are stored on the right of way. Some right of way difficulty has developed between Lambton and the crossing of Mimico Creek, on which section of the line no grading has been done. Efforts are being made to settle these matters.

Owing to a difficulty raised by the Village Council of Weston, the line to Woodbridge has not been put in operation. The Board of Railway Commissioners has ordered the reconstruction of the subway, about which the difficulty arose, and the division of the cost between the village, the company and the G. T. R.

It is expected that both the above lines will be completed and put in operation early next summer. (Oct., pg. 494.)

Winnipeg Electric Ry.—After several conferences between the City Council, representatives of the company and R. M. Fenstel, the street car traffic expert, who recently made a report on the electric railway in the city, a special committee was appointed to act for the City in further negotiations with the company on the report. As the result of the conference alterations were made in the routing along several lines. The Public Utilities Commission made an order, Nov. 4, that the cost of the investigation made by R. M. Fenstel, should be divided between the city and the company, each paying $2,637. (Nov., pg. 545.)

Grand Valley Ry.-Brantford St. Ry.—An extension of time to Nov. 23 was given the company to elect whether or not it would comply with the conditions imposed by the court as the result of the recent action brought by the city of Brantford, Ont., for the cancellation of the franchise. If the conditions are not complied with the city is to take possession of the streets, but not of the company's assets.

Electric Railway Notes.

The Dominion Power and Transmission Co. has received one freight car from the Preston Car and Coach Co.

The Regina Municipal Ry. has received one double truck snow sweeper from the Preston Car and Coach Co.

The Regina Municipal Ry. has purchased from the Preston Car and Coach Co. 18 double truck cars and one double truck snow sweeper, and has had a motor haulage car and some other rolling stock built in its own shops.

The Niagara, St. Catharines and Toronto Ry. Co. recently presented E. F. Purdon, an operator, with a gold watch and chain for bravery in preventing a collision when two freight cars broke loose from a train on the company's line in August.

H. C. Nickle, Superintendent of the Kingston, Portsmouth and Cartaraqui Electric Ry., is repoted as stating that after Oct. 1, 1914, a ten minute service will be given between 11 a. m., and 7 p. m., all the year round. At present a ten minutes service is given between these hours, during the summer.

The Montreal and Southern Counties Ry. has ordered six motor passenger cars, two trailer cars and two motor combination passenger and baggage cars, all 54 ft. 2 ins. long over buffers, with straight platforms. and equipped with all the most modern improvements, from the National Steel Car Co.

With reference to the statement in the daily press that the Toronto and York Radial Ry. is building an extension to its car barn on its Scarboro Division, we are officially advised that a storage switch has been built at the west side of the car barn, which is no doubt responsible for the report.

The Denver City Tramway has instituted what is called a "skip stop" service on one of its lines, as a means of relieving the traffic, and speeding up the schedule. Under this system, the cars stop at every other street travelling in one direction, and at the intermediate streets in the other direction, so that all streets have a stop in one or other direction.

The Toronto Suburban Ry. has given notice of an appeal to the Privy Council against the decision of the Appellate Division of the Supreme Court of Ontario, which upheld the application of the City of Toronto that the company shall pave the track allowance on which it operates on Bathurst St. and Davenport Rd. The company claims that under the agreement it is not compelled to do this work.

It was stated recently that the Montreal Tramways Co. had decided to obtain the ruling of the highest court, if necessary, in order to test its powers over passengers who refuse to comply with the company's antismoking regulations. We are advised that the company has had several cases before the recorder's court under the bylaw prohibiting smoking, and that it secured a conviction in each case. None of the cases have been appealed.

The Hull Electric Co. is in the market for four double truck trailer cars. The design of the car bodies will be the same as that in use for the company's motor cars, as illustrated in an article on its two car trains in Canadian Railway and Marine World for September, page 441, and the arrangement of the entrance and exit will be similar to that shown on the trailer car in the same illustration. The general dimensions of the cars will be, length over bumpers, 43 ft.; height from bottom of sill to top of roof, 8¾ ft.; width over side sheathing, 8½ ft.; seating capacity, 54 persons.

The Cape Breton Electric Co. has made a change in regard to the collection of fares on its local lines. Ever since commencing operation fares have been collected without the use of fare boxes, but fare registers have been used. On Nov. 1, the company started the use of portable hand fare boxes on its local lines in Sydney, North Sydney, Sydney Mines and Glace Bay, but it is continuing the old plan of fare collection on the interurban lines between Sydney and the colliery districts, using a fare register as in the past.

Proposed Municipal Interurban Electric Railways in Ontario.

In connection with the project for the building of an electric railway from Toronto to Port Perry, Ont., which was fully dealt with in Canadian Railway and Marine World for November, a meeting of representatives of municipalities interested was held in Toronto, Oct. 29. It was decided that support would generally be given to what is described as route 1, viz., from Toronto to Whitby, passing through Markham, Uxbridge, Brooklin and Port Perry, 71 miles. It was further decided that the Hydro-Electric Commission should draw up a contract for the building and operation of the line, which should be submitted to the municipalities for discussion. The financing of construction was also discussed, and the opinion was expressed that the Provincial Government should grant subsidies in favor of this and other similar lines.

A project has been started in Guelph to build a line to follow the Hydro-Electric Commission's power transmission lines from Hespeler through Guelph to Elora, Fergus, Arthur, and Mount Forest, and on through the Beaver Valley to Meaford or Thornbury. The Owen Sound Board of Trade, Oct. 30, passed a resolution favoring the Guelph project, but advocating the continuance of the line to Owen Sound.

A survey has been made of the County of Huron by engineers acting for the Hydro-Electric Commission, and preliminary plans for routes laid out. As soon as the necessary reports on these are received by the Commission, it is proposed to arrange for meetings to be held in Goderich, and other centres in the county to discuss the whole question. (Nov., pg. 539, and Sept., pg. 442.)

Port Arthur and Fort William Electric Ry.—At a meeting of the Fort William, Ont., City Council, Nov. 1, a resolution was passed deciding to take over the control of the part of the electric railway system within the city limits. At present the line is operated as a joint undertaking by a commission, but each city undertakes the construction of extensions within its own borders. Under the present agreement a through service between the two cities is carried on. A committee was appointed to arrange with Port Arthur the necessary details for the change. The suggestion is that the line shall be operated as at present by a joint board, but that it shall be run as two separate units, each city having control of its own lines, while a neutral zone will be provided, where the cars from each city will switch and turn.

The present joint commission was appointed in 1908 for four years, which terminates, it is claimed, in December. The commission decided, Nov. 6, to employ an outside man to assist the commission and the officers of the line in making up the final reports and to advise as to the future management.

Personal Paragraphs.

N. W. PATTERSON has been appointed Chief Inspector, Regina Municipal Ry.

THOMAS PENNY, formerly President International Ry. Co., which controls the Niagara Falls Park and River Ry. in Canada, has resumed practicing law in Buffalo, N. Y.

C. J. McCUAIG, stock broker, Montreal, who is President of the Sherbrooke Railway and Power Co. has been appointed honorary lieutenant colonel of the 53rd regiment, which has its head quarters at Sherbrooke.

PATRICK DUBEE, Secretary-Treasurer Montreal Tramways Co., and President Canadian Electric Railway Association, has been elected a member of the American Electric Railway Association's committee on taxation matters.

London and Lake Erie Ry. and Transportation Co.—G. B. Woods, Vice President, is reported to have stated in an interview at St. Thomas, Ont., Nov. 19, that the company had under consideration proposals for the extension of the line to Ingersoll, and to Aylmer. In reference to the latter proposal a deputation from the Aylmer district told Mr. Woods that a right of way would be provided to Aylmer, along or near the 7th concession of Yarmouth, if the company would agree to that route. Mr. Woods is reported to have stated that he personally favored a route along Talbot St. If the line was built in all probability a branch would be built to Sparta, five miles in length if the Talbot St. route was adopted, and four miles if the 7th concession route was selected. The route for the proposed line to Ingersoll would be a direct one. Since the present company took over the line, added Mr. Woods, about $150,000 had been expended upon improvements. (Aug., pg. 395.)

Co-operative Insurance for Employes has been arranged by the Fourth Avenue Ry., of New York, with an insurance company. The proposed policies are to be issued in lieu of a death benefit of $250 under the mutual benefit association affiliated with the company. For members of the association the average annual cost is to be about $11, but this rises to $12 for employes not members. The association will pay $4 of each member's premium and the remainder will be paid through the company, being deducted in weekly installments from wages. The payment of 75c. a year additional secures accident benefits varying from $250 for loss of thumb and index finger to $1,000 for the loss of both hands or feet, etc. Anyone leaving the company's employ may continue the insurance on paying the published rate for his age; the additional accident benefit may be secured after leaving the company's employ for an annual fee of $1.25.

Toronto, Barrie and Orillia Electric Ry.—At a meeting of the Barrie, Ont., Town Council, Nov. 17, a committee was appointed to confer with the company with a view to having an agreement for a franchise submitted to a vote of the ratepayers in January.

This company was originally incorporated by the Ontario Legislature as the Monarch Radial Ry., having power to build a railway from Toronto to Barrie and Orillia. An extension of time for construction, and authority to change its name to the T.,B. and O.E. Ry., was granted in 1912. (Feb., 1912, pg. 91.)

The London St. Ry. has received six single end single truck pay-as-you-enter city cars from the Preston Car and Coach Co.

The Board of Railway Commissioners has established express delivery and collection limits of Owen Sound, Ont.

Marine Department.

The Shipping Disasters on the Great Lakes.

What is, without doubt, the greatest disaster, or series of disasters, which has ever taken place in connection with the navigation of the Great Lakes, occurred chiefly during Nov. 9, when a severe storm swept the lakes from end to end. Though practically no part of the Great Lakes escaped some evidence of the storm, it seemed to have been most severe in Lake Huron, so far as damage to vessels and loss of life are concerned, but whether such damage and loss are due entirely to the storm, or to a possible bunching of vessels in the narrower parts of Lake Huron, thus restricting the area within which vessels might have run for safety, and making for possible collisions, is at present a matter for conjecture. Although a full enquiry will be made into all possible causes of the disaster, it is, unfortunately, impossible to obtain any very clear details of what actually happened, as any evidence which could be given and which would have any real value in clearing up many of the clouded points, could only be given by men who went down with the vessels. It is to be hoped, however, that much will be learnt, which if put to its proper use, should make for a general betterment of navigation conditions on the Great Lakes.

The Wrecked Steamship James Carruthers.

Name	Owner	Where and When Built	Dimensions	Tonnage	Value Approx.	Insurance	Lives Lost Approx.
CANADIAN:							
James Carruthers	St. Lawrence and Chicago Steam Navigation Co., Toronto	Collingwood, Ont. 1913	551x58x31	7862—5606	$385,000	$275,000	25
Leafield	Algoma Central and Hudson Bay Ry., Sault Ste. Marie, Ont.	Sunderland, Eng. 1892	249x35x16	1454 - 922	$ 85,000	$ 85,000	15
Regina	Canadian Interlake Line, Ltd., Toronto	Dumbarton, Scotland 1907	250x43x21	1957—1280	$150,000	$150,000	20
Turret Chief	Canadian Lake and Ocean Navigation Co., Ltd., Toronto	Sunderland, Eng. 1896	253x44x20	1881—1197	$100,000	$100,000	—
Wexford	Western Steamship Co., Ltd., Toronto	" " 1883	250x40x24	2104—1340	$100,000	$100,000	20
UNITED States:							
Argus	Interlake Steamship Co., Cleveland, O.	1903	416x50x28	4707—3380	$200,000	Not Known	24
Charles S. Price	Mahoning Steamship Co., Cleveland, O.	1910	504x54x30	6322—4901	$325,000	"	28
Henry B. Smith	Acme Transit Co., Cleveland, O.	1906	525x55x31	6631—5229	$325,000	"	26
Howard M. Hanna, Jr.	Hanna Transit Co., Cleveland, O.	1908	480x54x30	5905—4413	$ 25,000	"	—
Hydrus	Interlake Steamship Co., Cleveland, O.	1903	416x50x28	4713—3384	$200,000	"	23
Isaac M. Scott	Virginia Steamship Co., Cleveland, O.	1909	504x54x—	6372—4840	$325,000	"	28
John A. McGean	Pioneer Steamship Co., Cleveland, O.	1909	432x52x28	5100—3777	$250,000	"	23
L. C. Waldo	Roby Transportation Co., Detroit, Mich.	1896	452x48x28	4466—3519	$200,000	"	—
Louisiana	F. M. Osborne, Cleveland, O.	1887	267x39x21	1929—1383	$ 20,000	"	—
Matoa	Pittsburgh Steamship Co., Cleveland, O.	1890	290x46x25	2311—1836	$ 50,000	"	—
Northern Queen	Mutual Transportation Co., Buffalo, N.Y.	1889	299x41x25	2476—1885	.. ...	"	—
Wm. Nottingham	Great Lakes Steamship Co., Cleveland, O.	1902	380x50x28	4234—3070	......	"	3

Note:—The dimensions given above are in feet, representing length, breadth and depth in the order named; the tonnage shows gross and registered tons.

Of the Canadian vessels involved in the disaster, four have been absolutely lost, and little or no wreckage has been discovered, while a fifth, the Canadian Lake and Ocean Navigation Co.'s s.s. Turret Chief, was driven ashore in such a position that it is doubtful if she can be salved. The officers and crew of this latter vessel got ashore, but those of the other four vessels were all lost. The largest individual loss was the St. Lawrence and Chicago Steam Navigation Co.'s s.s. James Carruthers, an illustration of which is given herewith. She was the largest freight carrying steamship engaged in the Canadian lake trade, and was only launched at Collingwood, Ont., May 22. Of the Canadian vessels lost, she was the only one built in Canada, all the others having been built in Great Britain. The loss of United States vessels is considerably heavier, both as to number and value.

Capt. W. H. Wright, who had been master of the James Carruthers since her first trip at the commencement of the season, has been master of most of the vessels of the St. Lawrence and Chicago Steam Navigation Co.'s fleet. He was promoted from the command of the E. B. Osler, which, until the launching of the James Carruthers, was the largest of the company's vessels. On the recovery of his body, it was taken to his home at Toronto, the funeral taking place Nov. 17, when Capt. Crangle and J. H. G. Hagarty, director and Secretary-Treasurer of the company attended. The steamships Wexford and Leafield were in charge of Capt. B. Cameron and Capt. C. F. Baker, respectively, both of Collingwood, and the Regina, of Capt. E. H. McConkey, of Barrie, Ont. None of the bodies of the last three has been recovered at the time of writing.

In addition to total losses, there were a number of strandings, with consequent damage, these including the following Canadian vessels:—A. E. McKinistry, owned by Canada Interlake Line, Ltd., Toronto, near Brighton, in Lake Ontario; Acadian, owned by the same company, at Thunder Bay, Lake Superior; Huronic, owned by Northern Navigation Co., Sarnia, Ont., at Whitefish Point, Lake Superior, all of which were released without actual damage. The following U.S. vessels were also damaged by stranding, etc., but the extent of such damage is, at the moment, in most cases, unobtainable:—Fred. G. Hartwell, Mutual Steamship Co., Duluth, Minn., ashore at Iroquois Point; Chas. L. Hutchison, H. Wineman, Jr., Detroit, Mich., aground at Iroquois Point; G. J. Grammer, Seither Transit Co., Cleveland, O., aground at Lorain, Lake Erie; H. B. Hawgood, Acme Transit Co., Cleveland, O., aground off the St. Clair River, in Lake Huron; H. P. McIntosh, Wilson Transit Co., Cleveland; J. M. Jenks, Acme Transit Co., Cleveland, O., aground near Midland, Ont.; Lafayette, J. J. Freitus, Buffalo, N.Y., ashore near Calumet, Mich.; Major, W. H. Gratwick, Buffalo, N.Y., reported abandoned near Whitefish Point, Lake Superior; Manchester, Milwaukee Western Steamship Co., Milwaukee, Wis.; Mathew Andrews, Kinsman Transit Co., Cleveland, O., aground on Corsican Shoals, Lake Huron.

The following table shows the names of the vessels lost, their owners, dimensions, etc., and their approximate value and insurance. With the exception of the James Carruthers, the amount mentioned as insured is intended to represent that the vessel is insured for its full value, and not necessarily the actual amount for which it is insured. In the case of the James Carruthers, the owning company a few years ago adopted the policy of insuring only a proportion of the risk under a modified form of insurance policy, and crediting an insurance fund with the amount of the premiums saved in each year. The report for 1912 showed that there was at the credit of this account $109,290.47, and the directors stated that it was their intention to continue this policy until insurance could be obtained at what they considered reasonable rates and on reasonable terms. The amounts insured for the U.S. vessels cannot be ascertained, but it may be taken for granted that they are all well covered. It is not intended that this table should be taken as correct in every detail, as owing to varying circumstances, discrepancies are likely to appear, but it is believed to be correct.

In addition to the vessels mentioned, the U.S. Lightship no. 82 was driven from its moorings off Point Abino, Lake Erie, and lost, and the barges Halstead and Plymouth, and tug Martin were also reported lost. The number of lives lost has been estimated at about 250, but in this there is a certain amount of guess work as, so far as the Canadian vessels are concerned, the numbers of the crews on their last voyage is not definitely known in several cases.

Labor troubles at various ports in Great Britain and Ireland during the present year have interfered considerably with the St. Lawrence trade. Five of the Head Line steamships are reported to be tied up on account of the Dublin strike.

The Dominon Government Customs Patrol Steamship Margaret.

The steel twin screw patrol steamship which is under construction at Southampton, Eng., for the Dominion Government Customs Department, will be of the following dimensions,—length between perpendiculars, 185 ft.; breadth, moulded, 32 ft.; depth, moulded to main deck, 16 ft.; draught, forward and aft, 10½ ft.; deadweight on foregoing draught, 175 tons; coal, full supply, 200 tons; indicated horse power, 2,000; complement, officers and crew, 32; armament, two 6-pounder quick firing guns.

She will have a ram stem and cruiser stern, and five main transverse water tight bulkheads, all extending to the main deck. The shafting will be housed in the hull, the plating and frames being bossed out for the purpose.

The propelling machinery will consist of two sets of inverted, vertical, direct acting, triple expansion, surface condensing engines, each set having three cylinders working on separate cranks at angles of 120 degrees with each other in sequence of high, intermediate and low when the engines are going ahead. The engines will be capable of developing not less than 2,000 i.h.p. on a trial of 6 hours when running at about 180 revs. a minute with 220 lbs. of steam pressure in the boilers. There will be two boilers of the water tube type, each being used independently of the other, and each fitted with Howden's patent forced draught system made in accordance with plans furnished by Howden & Co. The total heating surface will be 5,500 sq. ft. with a total grate area of about 100 sq. ft.

There will be three decks, viz.,—lower, main, and boat and forecastle. On the lower deck will be located two state rooms, bath room and toilet, engineers' quarters and general crew's accommodation; on the main deck, two state rooms, dining saloon and officers', stewards' and wireless operator's quarters; on the boat deck, the day cabin, captain's quarters, wheel house, etc.

The auxiliary machinery will consist of windlass, capstan, boat hoist, refrigerating engine, steering gear, etc., and there will be a complete electric light installation with search light, and a wireless telegraph equipment.

The Dominion Government Fisheries Protection Steamship Malaspina.

The first of the two vessels built in Dublin, Ireland, for the fisheries protection service, was expected on the Pacific coast, where she will be stationed, towards the end of November. The severe trials through which vessels for this service are put, were carried through successfully without mishap. With the specified dead weight on board a speed of 14.7 knots was obtained as a mean of six hours run on the measured mile.

She has been built for the highest class at Lloyd's for both hull and machinery, and she is of the flush deck type with the machinery amidships, a top gallant forecastle and long bridge or awning deck amidships, with chart room at the forward end with navigating bridge, house and pilot's room above. The captain's and officers' quarters are located under the bridge deck forward, and under the after end of the bridge deck are the wireless telegraph and operators' rooms, with the engineers' quarters immediately below under the main deck. The general crew's quarters are immediately under the forecastle deck, and on the lower deck forward are the petty officers' quarters connected by a companion way with the main deck.

The hull is divided by transverse and longitudinal bulkheads into 20 water tight compartments, and she is fully equipped with lifeboats, mechanical lowering equipment, etc., steam steering gear, steam windlass and steam warping winch. There are also a complete electric light installation with searchlight, refrigerating plant and cold storage, wireless telegraph installation, steam heating and hot water systems, etc.

The propelling machinery consists of triple expansion engines supplied with steam by a marine type boiler at 180 lbs. under Howden's patent forced draught system. There is a large bunker capacity sufficient for steaming about 6,000 miles at about 9 knots an hour.

The Dominion Department of Public Works will receive tenders to Nov. 17 for the construction of harbor improvements at Port Hope, Ont.

List of Steam Vessels Registered in Canada during October, 1913.

No.	Name	Port of Registry	When and Where Built		Length	Breadth	Depth	Gross Tons	Reg. Tons	Engines, Etc.	Owner or Managing Owner
[illegible]	[illegible]	Sault Ste. Marie...	[illegible] Wis.	[illegible]	[illegible]	[illegible]	7 1	146	[illegible]	16n.h.p. sc.	Dominion Fish Co., Wiarton, Ont.
[illegible]	Rupert City (a).	Vancouver, B.C....	[illegible]	[illegible]	310 2	38 1	[illegible]	[illegible]	[illegible]	[illegible] " "	N. Hardie, Vancouver, B.C.
[illegible]	[illegible]	[illegible]	[illegible] Que.	1913	[illegible]	15 0	[illegible]	41	18	15 " "	Napoleon Trudel, St. Irenee, Que

(a) [illegible]

List of Sailing Vessels and Barges Registered in Canada during October, 1913.

No.	Name	Port of Registry	Rig	When and Where Built		Length	Breadth	Depth	Reg. Tons	Owner or Managing Owner
[illegible]	[illegible]	Vancouver, B.C........	[illegible]	Vancouver, B.C....	1913	[illegible]	[illegible]	7 7	[illegible]	Armstrong, Morrison & Co., Vancouver, B.C.
[illegible]	[illegible]			" "	[illegible]	64 4	[illegible]	7 7	[illegible]	" " " "
[illegible]	[illegible]			"	1913	[illegible]	30 0	6 6	[illegible]	" " " "
[illegible]	[illegible]			"	1913	72 4	[illegible]	6 6	131	" " " "
[illegible]	[illegible]	[illegible]	Schr......	Belliveau Cove, N.B.	1913	112 5	[illegible]	[illegible]	[illegible]	P. A. Theriault et al., Belliveau Cove, N.S.
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1911	[illegible]	[illegible]	[illegible]	[illegible]	A. Berquist, Victoria, B.C.
[illegible]	[illegible]	[illegible]	[illegible]	Mahone Bay, N.S.	[illegible]	[illegible]	17 1	[illegible]	[illegible]	D. E. Conrod, M.O., Grand Desert, N.S.
[illegible]	[illegible]	[illegible]		[illegible]	1913	95 0	23 0	9 7	[illegible]	W. H. Hollett, M.O., Burin, Nfld.
[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible] Belleville, Ont.
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1911	75 0	24 0	7 0	115	[illegible] Sault Ste. Marie, Ont.
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	12 8	[illegible]	G. A. Cox, M.O., Shelburne, N.S.
[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	5 2	[illegible]	G. E. Doucette, Mavilette, N.S.
[illegible]	[illegible]	Vancouver, B.C........	[illegible]	[illegible]	[illegible]	[illegible]	41 9	24 2	[illegible]	Ship Simla Co., Vancouver, B.C,

[illegible]

Canadian Notices to Mariners.

The Department of Marine has issued the following

363. Oct. 22.—Ontario, Georgian Bay, Midland Bay, Tiffin, dredging

364. Oct 22.—Ontario, Georgian Bay, Victoria harbor, Port McNicoll, dredging

365. Oct 22.—United States of America, Lake Erie, Buffalo harbor entrance, dredging, caution.

366. Oct. 22.—British Columbia, Queen Charlotte Islands, chart of Skidegate Inlet issued.

367. Oct. 22.—Alaska, Revillagigedo Channel, Cutter Rocks, beacon rebuilt.

368. Oct. 22.—Alaska, Cross Sound, Cape Spencer, light established.

369. Oct. 27.—New Brunswick, east coast, Miramichi Bay, Grandon Flats channel, buoys established.

370. Oct. 27.—Quebec, River St. Lawrence, Montreal harbor, buoy established, position of gas buoy.

371. Oct. 29.—Ontario, Bay of Quinte, Big Bay, wharf, buoys placed.

372. Oct. 29.—Ontario, Georgian Bay, approach to Victoria harbor, Midland Point range lights, light poles replaced by towers.

373. Oct. 31.—Nova Scotia, south coast, entrance to Halifax harbor, Sambro outer bank, gas and whistling buoy to be replaced during the winter months by a lightship.

374. Oct. 31.—Prince Edward Island, south coast, Northumberland Strait, Prim Point, erratum in List of Lights.

375. Oct. 31.—Prince Edward Island, north coast, Shipwreck Point, lighthouse established.

376. Oct. 31.—Quebec, Chaleur Bay, Cascapedia Bay, New Richmond, buoy.

377. Nov. 4.—New Brunswick, south coast, Bay of Fundy, intended change in color of Beaver harbor whistling buoy.

378. Nov. 4.—New Brunswick, south coast, approach to St. John, Sheldon Point, temporary light.

379. Nov. 4.—New Brunswick, south coast, Bay of Fundy, intended change in color of Mispek bell buoy.

380. Nov. 4.—Nova Scotia, Bay of Fundy, Minas basin, Cobequid bay, entrance to Portapique River, lighthouse to be established near wharf, pole light to be discontinued.

381. Nov. 4.—Nova Scotia, south coast, approach to Sheet Harbor, intended change in color of gas and whistling buoy.

383. Nov. 4.—Newfoundland, east coast, Cape Bonavista, fog alarm to be established.

384. Nov. 6. Maritime Provinces, North Head, Shinimikas River, Shipwreck Point, names.

385. Nov. 6. Prince Edward Island, south coast, Northumberland Strait, Bedeque Bay, Summerside harbor, position of buoy.

386. Nov. 6. Quebec, River St. Lawrence, ship channel between Quebec and Montreal, Pointe aux Trembles, change in character of buoy.

387. Nov. 6. Quebec, Montreal harbor, temporary buoy removed.

388. Nov. 8. British Columbia, Strait of Georgia, Sisters rocks, intended change in character of light, temporary light.

389. Nov. 10. Ontario, Ottawa River, Deep River inlet, lighthouse rebuilt.

390. Nov. 10. Ontario, Lake Huron, Southampton, gas buoy carried away by storm.

391. Nov. 10. Ontario, Georgian Bay, Penetanguishene, light on Reformatory pier improved.

392. Nov. 12. Prince Edward Island, southeast, Cape Bear, change in character of light.

393. Nov. 14. Ontario, Lake Ontario, Cobourg harbor, extension to breakwater under construction, temporary light, caution.

394. Nov. 14. Ontario, Detroit River, Limekiln Crossing channel, north light vessel withdrawn, fog bell discontinued.

395. Nov. 15. Ontario, Lake Erie, Port Colborne, beacon light on eastern breakwater discontinued.

396. Nov. 17. Nova Scotia, North Atlantic Ocean, Sable Island east bar, position of dry bar.

397. Nov. 17. Nova Scotia, North Atlantic Ocean, eastward of Cranberry Island lighthouse, cable buoy moored temporarily.

398. Nov. 17. Prince Edward Island, south coast, Northumberland Strait, Bedeque Bay, Summerside, intended change in position of back range lighthouse.

399. Nov. 17. Newfoundland, south coast, off Burnt Islands, Bad Neighbor shoal, spar buoy replaced by bell buoy.

400. Nov. 18.—Ontario, Georgian Bay, west side, Lionhead harbor, lighthouse and outer portion of breakwater destroyed by storm, temporary light.

401. Nov. 18.—Ontario, Lake Huron, north channel, Little Current, railway swing bridge, regulations, lights.

402. Nov. 19.—Quebec, River St. Lawrence, from the Gulf to Montreal, color of gas buoys and lights.

Canada Steamship Lines, Limited.

It is announced that during the early part of December, an issue of $6,106,000 of 5% debenture stock will be made in London, Eng., which will be convertible into bonds at the option of the holder, and which will be a part of the total issue of $9,000,000, repayable at 105, in 1943. The London prospectus shows consolidated net profits of the companies concerned, for 1912, at $1,494,554, against $552,533 required to pay the interest and sinking fund on securities to be issued at present, including the amount reserved to retire underlying bonds, and to pay the balance of the cost of building the Northern Navigation Co.'s s.s. Noronic. It is estimated that on the basis of the increased gross earnings to Aug. 31, 1913, the net earnings for this year will be about $1,750,000. Interest at 5% and sinking fund at 1½% on the $8,500,517 debenture stock will require $552,533, showing a surplus of $1,197,467. In 1914, when the improvements and economies effected by the consolidation have come into full operation, it is estimated that the net earnings will approximate $2,000,000.

It is proposed to exchange six 7% preference shares of Canada Steamship Lines, Ltd., for every five common shares of Richelieu and Ontario Navigation Co., now held, with a bonus of common stock.

It is stated that the name of Canada Steamship Lines, Ltd., has been selected to replace the one previously adopted, Canada Transportation Lines, Ltd., in deference to the wishes of British investors.

Following are the names of those constituting the board of directors:—James Carruthers, President; Wm. Wainwright, D. B. Hanna, W. D. Matthews, J. P. Steedman, Sir Montagu Allan, H. B. Smith, E. Bristol, J. R. Binning, M. J. Haney, Aemilius Jarvis, Hon. J. P. B. Casgrain, C. A. Barnard and J. W. Norcross, Managing Director. A London advisory board has been appointed, consisting of Sir Stephen Furness, Sir Trevor Dawson, Sir Vincent Caillard, F. W. Lewis, A. Vickers, W. G. Morden and C. G. Bryan.

The Baffin's Bay Co., Ltd., has been incorporated under the Dominion Companies Act with $100,000 capital and office at Toronto, to carry on a general Arctic trading business, and in connection therewith to own and operate steam and other vessels for whale fishing, etc.

Welland Ship Canal Contracts.

Tenders for the construction of section [illegible] of the new Welland Ship Canal were received up to Nov. 18 by the Department of Railways and Canals. This section is 2.6 miles long, extending from the centre of Allanburgh, where the new and present canals will join, to Port Robinson, where the new canal will diverge from the present canal to follow its new course along the Welland River. This section of the canal is probably the simplest of all the nine sections into which the work is being divided, as the new canal will follow the present one along exactly the same course through this whole section. The work will consist entirely of widening and deepening the present channel, and as the rock cutting through this section is small, the work will be light. This section is on a tangent throughout nearly its full length, and will be crossed by only one bridge, no. 13, in Port Robinson. A press report from Ottawa, Nov. 24, states that this contract has been awarded to the Canadian Dredging Co. at prices which are estimated to approximate $2,000,000. The report is in error in stating that there only remains one more section of the canal to be put under contract, as sections 4, 6, 7, 8 and 9 have yet to be tendered for.

The contract for section 2 has been awarded to Baldry, Yerburgh and Hutchinson, of St. Catharines, Ont., and London, Eng., the amount involved approximating $5,500,000.

Full details of the work, as it will be when completed, appeared in Canadian Railway and Marine World for July and August.

St. Lawrence and Chicago Steam Navigation Company's New Stock Issue.

As mentioned in Canadian Railway and Marine World for November, the directors have decided to build another steamship, a duplicate of the s.s. James Carruthers, recently wrecked, to take care of its increasing business, and an order has been placed for it at Collingwood, Ont.

In order to meet the payments for this vessel, the directors decided to issue 1,400 new shares at par, in the first instance to shareholders of record on Nov. 15, in the proportion of one new share for every six shares held. The amounts subscribed are payable in two instalments, 25% on Dec. 15, and 75% on Jan. 5, 1914. In the event of any shareholders paying the first instalment and failing to pay the second instalment by the due date, their rights to such shares and all moneys paid in respect of same shall be forfeited to the company, and in the event of any shareholders failing to take up any new shares and to pay the first instalment, their rights to such shares shall be forfeited to the company. All new shares forfeited and any left over undistributed shall be disposed of by the directors as they may see fit. No allotment will be made to the holder of less than six shares, nor to the holder of more than six shares in respect of any shares held which are not a multiple of six.

Prize for Advertising or Sales Essay.—Advertising & Selling, New York, has authorized the Associated Advertising Clubs of America to announce a prize of $1,000 in cash, which it will pay at the Toronto convention next year—and every year thereafter until further notice—to the person who writes the most vital and helpful essay on a sales or advertising subject, in the opinion of the official awards committee of the Associated Clubs and of the editorial advisory board of Advertising & Selling, consisting of prominent advertising managers.

The Royal Line and St. John, N.B.

Since the inception of the Royal Line between Canada and England by Canadian Northern Steamships, Ltd., Halifax has been the Canadian winter port for the company's two steamships, Royal Edward and Royal George. On account of the new mail contract, which came into effect recently, and by which the mails were to be taken from and delivered to either Halifax or St. John, at the contractors' option, some little rearrangement of the steamship service to these two ports has been deemed advisable. The C.P.R. and Allan Line, which control the majority of the vessels engaged in the mail service, selected Halifax as their mail port, and decided to make that the terminus for the steamships Empress of Britain and Empress of Ireland, instead of St. John, as hitherto. In this connection, several representative bodies from St. John interviewed the Government, and as an outcome, the Minister of Marine announced at St. John, Nov. 12, that arrangements had been made with Canadian Northern Steamships, Ltd., that the Royal Edward and Royal George will make St. John their Canadian terminus this winter, instead of Halifax, the first sailing under the new schedule being from Bristol, Eng., Dec. 3, and from St. John, Dec. 16.

Atlantic and Pacific Ocean Marine.

Manchester Liners' s.s. Manchester Commerce, while passing through the Strait of Belle Isle, Nov. 1, struck an iceberg, necessitating a call at St. John's, Nfld., where she was drydocked for examination and repairs.

A fortnightly service between France and Halifax, N.S., calling at St. Pierre Miquelon and Sydney, has been inaugurated by the s.s. Miquelon, owned by La Morue Francaise et Secheries de Fecamp, a French firm with interests in St. Pierre Miquelon.

In connection with various statements repeated in the daily press recently, G. M. Bosworth, Vice President, C.P.R., has stated that it is not the company's intention to operate a steamship service through the Panama Canal.

Press dispatches from St. John, N.B., recently stated that Canadian Northern Steamships Ltd. had decided to change the winter terminal of the Royal Line from Halifax to St. John. We have been officially advised that Halifax is the winter port of the line, and no such change as that indicated is, or has been contemplated.

It is announced in London, Eng., that the Hudson's Bay Co. intends spending £4,000,000 on developments in Northwestern Canada, in the establishing of further trading posts, and in building specially designed steamships for the Hudson Bay route to Liverpool, Eng., and for a service between the Pacific Coast and England, via the Panama Canal.

The Hudson's Bay Co. has erected an interesting memorial in Vancouver, consisting of the mast of the company's old steamship Beaver. This vessel was built by the company at Blackwall on Thames, Eng., in 1835, and launched by King William IV. She was the first steamship to come round Cape Horn to Vancouver, and was wrecked in 1888 at Prospect Point, Stanley Park. The mast has been encased in steel and is set in a bed of concrete on a granite base.

A dispatch from London, Eng., dated Nov. 12, states on the authority of the Times that "the capital has been raised in Boston and Great Britain for necessary engineering works and the establishment of a line of steamers running direct from Blacksod Bay, County Mayo, Ireland, to Halifax and Boston. This project is in connection with the schemes for all British communication around the Empire." The inclusion of Boston in an all British scheme for communication around the Empire, makes one wonder if the writer of the dispatch ever heard of a Boston tea party.

The Allan Line announces that its two new quadruple screw turbine steamships Alsatian and Calgarian, will be in service between Halifax and Liverpool, early in the New Year, the first sailing of the Alsatian taking place from Liverpool, Jan. 17, and from Halifax, Jan. 31. These vessels are 600 ft. long, 18,000 tons, with a speed of from 18 to 20 knots an hour. They will be the largest on the Canadian route, and will be equipped with the latest wireless telegraphy, submarine signalling and other installations. The Allan Line is now announced as being operated in connection with the C.P.R.

A representative of a Mexican company was in Victoria recently with the view of arranging a steamship service between British Columbia ports and Salina Cruz, Mexico, in connection with the Tehuantepec Ry. If the scheme is carried through, it is intended to place a number of small steamships on the route, with accommodation for both passengers and freight, on a trimonthly service. The Canadian Mexican Pacific Steamship Co., now a part of the Union Steamship Co., the Harrison Direct Line, and W. R. Grace & Co., have each run vessels on this route at various times, and with the exception of the last mentioned, have abandoned the service on account of the unsettled condition of affairs in Mexico.

Maritime Provinces and Newfoundland.

The Eastern Steamship Corporation's s.s. Governor Cobb, which has been on the Yarmouth-Boston route for some time, is having her turbine engines overhauled at Bath, Me.

The C.P.R. has withdrawn the s.s. St. George from the Bay of Fundy service for the winter, during which period the run between St. John, N.B., and Digby, N.S., will be taken by the s.s. Yarmouth.

The s.s. Alcona, owned by fishing interests in Gloucester, Mass., and engaged off the Newfoundland coast, as a refrigerator vessel in attendance on the fishing fleet, took fire and sank in Curling harbor, Nfld., Nov. 6. She was valued at $100,000.

The Ship Masters Association no. 1 of Canada, which was organized at Halifax, N.S., in April, 1910, has now 60 members in good standing. The officers are:—President, Capt. N. Hall; Treasurer, Capt. D. A. Scott; Secretary, Capt. Ernest Wells. Meetings are held on the third Tuesday in each month.

The Southern Salvage Co., Liverpool, N.S., is reported to be building a steam tug for salvage purposes on the Nova Scotia coast, to be 118 ft. long and 32 ft. beam, with twin screws. The engines will be of the compound surface condensing type developing about 700 h.p., for a speed of 12 knots an hour.

The Dominion Coal Co's. s.s. Bridgeport which left Sydney, N.S., Nov. 1, for St. Lawrence ports, is believed to have been lost with her crew during a severe storm. She was a comparatively new vessel, her dimensions being, length 442 ft., breadth 58 ft., draught 28 ft. 7 ins., 3,380 registered tons. The crew numbered 40, the majority being Chinese.

The board of conciliation appointed under the Industrial Labor Disputes Act, to hear the complaints of the longshoremen at St. John, N.B., has reported to Ottawa, and it is said that a satisfactory agreement will result. The board consisted of W. E. Foster, chairman; J. E. Moore, representing the Shipping Federation of Canada, and J. E. Tighe on behalf of the men.

About the end of December, or early in January, the Department of Marine will replace the gas and whistling buoy on the Sambro outer bank at the entrance to Halifax harbor, by a light ship. The hull of the steamboat to be used, is painted red, with the word Halifax in white on each side, and with No. 15 on each side of the bow.

The Department of Railways and Canals has issued a notice to the effect that the public wharf or pier at Cape Tormentine, N.B., is closed for the remainder of the season and for two months from the reopening of navigation in 1914, in consequence of the work now in progress there in connection with the car ferry terminal.

Sault Ste. Marie Canals Traffic.

The following commerce passed through the Sault Ste. Marie Canals during October, 1913.

ARTICLES			CANADIAN CANAL	U. S. CANAL	TOTAL
Copper	Eastbound	Short tons	28	4,998	5,026
Grain	"	Bushels	6,050,692	8,338,364	14,389,056
Building stone	"	Short tons			
Flour	"	Barrels	200,560	1,331,976	1,532,536
Iron ore	"	Short tons	4,329,478	2,362,655	6,692,133
Pig iron	"	"		2,051	2,051
Lumber	"	M. ft. b.m.	4,311	76,890	81,201
Silver ore	"	Short tons			
Wheat	"	Bushels	32,027,253	12,691,618	44,718,871
General merchandise	"	Short tons	7,438	40,510	47,948
Passengers	"	Number	542	645	1,187
Coal, hard	Westbound	Short tons	54,967	237,723	292,690
Coal, soft	"	"	388,576	1,309,245	1,697,821
Flour	"	Barrels	1,000	40	1,040
Grain	"	Bushels			
Manufactured iron	"	Short tons	20,826	36,933	57,759
Iron ore	"	"			
Salt	"	Barrels	12,245	86,781	99,026
General merchandise	"	Short tons	82,862	97,682	180,544
Passengers	"	Number	708	199	907
Summary					
Vessel passages		Number	1,220	2,172	3,392
Registered tonnage		Net	3,813,722	4,720,611	8,534,333
Freight—Eastbound		Short tons	5,446,968	3,228,622	8,675,590
—Westbound		"	549,080	1,694,604	2,243,684
Total freight		"	5,996,048	4,923,226	10,919,274

The schooner Gypsum Emperor, owned in the U.S., but registered at Windsor, N.S., while bound from New York to Halifax, N.S., with coal, was reported to have been dismasted during a storm at sea and to have been abandoned in a waterlogged condition. The crew was saved by the Hamburg American Line s.s. Barcelona, bound from Philadelphia to Hamburg. The schooner was built at Parrsboro, N.S., in 1892, her dimensions being: length, 179.2 ft.; breadth, 36.2 ft.; depth, 16.2 ft.; 695 tons register.

Province of Quebec Marine.

The removal of the gas buoys from the St. Lawrence ship channel commenced Nov. 22, when they were replaced by spar buoys for the remainder of the navigation season, which will close early in December.

The Quebec Harbor Commission's grain elevator is practically complete so far as the construction work is concerned. It was expected that the installation of the machinery would be commenced towards the end of November.

The Reid-Donald Steamship Co., Ltd., has been incorporated under the Dominion Companies Act, with $100,000 capital and office at Montreal, to own and operate steam and other vessels, and to carry on a general trading, navigation and salvage business.

Canadian Vickers, Ltd., announce that work will proceed on the erection of machine shops, etc., at Maisonnevue during the winter, and it is anticipated that the plant will be completed by about July 1, 1914. The foundations of the shipbuilding slipway have been laid, and the structural work is in process of construction by the Dominion Bridge Co.

Ontario and the Great Lakes.

The Canada Interlake Line's s.s. Mapleton, while passing through the Welland Canal recently, struck the wall of the Humberstone bridge, near Port Colborne, damaging some of her plates forward. She returned to Port Colborne and discharged her cargo.

The Keystone Transportation Co.'s s.s. Keyvive, which has been built at Middlesbrough, Eng., arrived at Thorold, Ont., the end of October, with a cargo of sulphide pulp from Hernosand, Norway. She is a sister vessel to the company's vessels, Keywest and Keyport.

W. H. Sullivan, Superintending Engineer, Welland Canal, has been appointed Principal Assistant Engineer, Welland ship Canal, St. Catharines, Ont., and L. D. Hara, Assistant Engineer, Welland Canal, has been appointed acting Superintending Engineer, Welland Canal, vice W. H. Sullivan.

The Merchants Mutual Line's s.s. Mapleton, while upbound, Nov. 19, ran ashore on Drummond Island, during a dense fog. It was expected that she would have to be lightered of her cargo of cement before being released. She is being operated by Canadian Interlake Line, Ltd.

The s.s. Mary C. Elphicke, owned by the Republic Transportation Co., Cleveland, Ohio, which foundered in Lake Erie recently, is reported to have broken up and, with her cargo of grain, become a total loss. She was built in 1901, her dimensions being:—length, 430 ft.; breadth, 50 ft.; depth, 29 ft.; tonnage, 4,998 gross, 3,967 register.

The Northern Navigation Co.'s s.s. Noronic, which has been built at Port Arthur, Ont., was given a number of trial runs in Thunder Bay, Nov. 24, for the adjustment of her compasses, etc. She later loaded flour at Fort William, and sailed for Sarnia, where all her furnishings will be installed during the winter.

It was announced early in November that the Northern Navigation Co.'s s.s. Noronic, which has been built at Port Arthur, would sail from that port towards the end of November for Sarnia, where all the furnishings would be installed during the winter. Prior to sailing, she was to make trial runs in the bay, after which she was to load flour for the east.

The Department of Marine has announced that the gas buoy off the north end of Chantry Island bank, near Southampton in Lake Huron, which was carried away from its moorings during a storm, and which it was stated in the Canadian Notices to Mariners, no. 390, Nov. 10, would not in all probability be replaced this season, has been replaced.

Work was commenced early in November on the wreck of the Keystone Transportation Co.'s s.s. Keystone, which sank in deep water in Chippewa Bay, St. Lawrence River, Oct. 26, 1912. The wreck has been located and the hull is being prepared preparatory to using compressed air in order to raise her. The cargo is valued at $300,000. Some interesting particulars were given in our last issue.

The Montreal Transportation Co.'s barge, Cornwall, with 40,000 bush. of wheat, while passing through the Cornwall Canal, Nov. 2, in tow of the steam tug Emmerson, broke her lines and blocked navigation. She was later secured and taken to Bergins Lake, where she sank, and is probably a total loss. She was built at Kingston in 1890, her dimensions being:—length, 178.6 ft.; breadth, 35.2 ft.; depth, 11.7 ft.; 586 tons register.

It is estimated that work involving the expenditure of $1,200,000 has been undertaken in Fort William by the Government during this year, including dredging in the channels, building slip and abutment walls, etc. Other works to be undertaken next year cover the construction of 2,646 ft. of concrete abutment walls on the Mission River, and the construction of a turning basin necessitating the removal of about 25 acres of earth.

The dredging completed and swept at Port McNicoll, in Pictoria Harbor shows a depth of 25 ft. below the zero plane of Georgian Bay, including the whole of the space in the dock between the quay walls, 600 ft. wide, and extends to deep water. A gas buoy is moored at the turn on the northern edge of the dredged channel, close round which vessels should turn, and straighten up for the middle of the dock opening.

In connection with the dredging in Midland Bay, a plan of the work completed and swept at Tiffin shows a depth of 25 ft. below the zero plane of Georgian Bay, for a width of 340 ft. in front of the G.T.R. quay wall and for 680 ft. along the face of it from the northwest corner of the elevator quay. From the quay the channel is 400 ft. wide to deep water, the northeast edge of the dredging being in the same line as the work in front of the quay.

The U.S. Lake Survey reports the levels of the Great Lakes in feet above tidewater for October as follows:—Superior, 603.03; Michigan and Huron, 580.70; Erie, 572.42; Ontario, 246.29. Compared with the average October levels of the past ten years, Superior was 0.27 ft. above, Michigan and Huron 0.04 ft. above, Erie 0.26 ft. above, and Ontario 0.35 ft. above. It was anticipated that during November, Superior would fall about 0.2 ft., and Michigan, Huron, Erie and Ontario about 0.3 ft.

Masters of vessels are warned to have great care when in the vicinity of the Buffalo harbor entrance to reduce speed promptly when signalled by dredge or drill boat whistles. Rock excavation to deepen the approach to the north entrance to the harbor, to 25 ft. at mean lake level over an area of about 2,400 ft. long and 60 ft. wide, northward of the northern end of the old breakwater, which has been in progress since September, will continue until completed in 1915. Owing to the upheaval of rock by blasting and dredging, vessels drawing more than 14 ft. should keep clear of this area and navigate only in the channel to the northward marked by gas buoys.

The Lake Superior Dry Dock and Construction Co. Ltd., has been incorporated under the Ontario Companies Act, with $1,500,000 capital, and office at Sault Ste. Marie, to build dry docks, steam and other vessels, and to carry on a general contracting business. The incorporators are all professional men in Toronto, but it is said that this is the concern which will undertake the construction of a dry dock and ship repairing and building plant at Sault Ste. Marie, some details of which were given in our last issue. It has been announced that $25,000 has been deposited in a local bank as evidence of the company's good faith, preparatory to the submission of a bylaw granting a subsidy in aid of the work.

British Columbia and Pacific Coast Marine.

The G.T. Pacific Coast Steamship Co.'s s.s. Prince John has been withdrawn from the service for overhauling and to have oil burning equipment installed.

The C.P.R. coal boat Coronado, which was acquired in Seattle, Wash., some time ago, was reported to have foundered in the Gulf of Georgia, Nov. 20, with her cargo of 1,600 tons of coal.

The United States authorities have rebuilt the beacon tower on the Cutter rocks in the Revillagigedo channel, Alaska, and have established a flashing white light on a small islet off Cape Spencer, in Cross Sound, Alaska.

The Vancouver Tugboat Co. recently commenced an action against the Grand Trunk Pacific Coast Steamship Co. on a claim for salvage of its steamship Prince Albert, which stranded near Port Simpson, May 23. The damage sustained by the Prince Albert was approximately $20,000.

Regarding the proposed dredge for the Dominion Public Works Department, for use on the inland lakes of British Columbia, plans for which were being prepared by Cartwright, Matheson and Co., Vancouver, as mentioned in our last issue, we are officially advised that its construction is not being proceeded with at present.

It was recently announced that work was to have been commenced towards the end of November on the excavation in connection with the construction of the Dominion Government dry dock at Burrard Inlet. A contract for the building of a drill scow was recently awarded, and this is under construction at North Vancouver, and will probably be ready during December. H. McFee and Co. are the general contractors.

The C.P.R. s.s. Princess Beatrice is again in service, after receiving a thorough overhaul. She has relieved the s.s. Princess Mary on the Granby Bay route, and it is said that the Princess Mary will be laid up at Victoria, where she will probably have oil burning apparatus installed. The s.s. Princess Maquinna is again in service, after repairs necessitated by striking a rock in Yakutat Bay, Alaska, in September. She has replaced the s.s. Tees, which will be held as a relief vessel during the winter.

A press report from Vancouver, published in Canadian Railway and Marine World for November, stated that the White Pass and Yukon Route would start a direct passenger steamship service between Vancouver and Skagway, Alaska, using vessels which would be built at a cost of about $1,000,000 each. The President, O. L. Dickeson, left for England in November to consult with the directors, and will probably return early in January, when a definite announcement may be expected. There appears to be no doubt that the service referred to will be established.

The two vessels under construction at Dumbarton, Scotland, for the C.P.R. British Columbia coast service, are proceeding rapidly, and it is expected that both of them will be delivered next spring and that they will arrive on the coast towards the end of the year, by way of the Panama Canal. They will be equipped with the latest Parsons geared turbines, by which it is claimed the greatest efficiency is obtained from both the turbine and the propeller. It is stated that these vessels will be the fastest in service on the coast, the contract speed being 22½ knots an hour.

The Pacific Coast Steamship Co., which operates a weekly steamship service into Vancouver has communicated with the Marine Department at Ottawa, protesting against the compulsory payment of pilotage dues. It states that the amount paid is in excess of $4,000 a year for services which are not used nor required, as all its captains are fully qualified to pilot vessels in and out of all harbors on the Pacific coast. If it is considered desirable to maintain a system of compulsory pilotage dues, it is suggested that a flat rate of $200 a vessel a year be paid, and that the Dominion Government authorize the local pilotage authority to make such flat rates in its discretion.

In our last issue a complete denial was given to the rumor that the Canadian Northern Ry. had placed orders in Glasgow, Scotland, for two steamships for a Pacific coast service, but notwithstanding this, the Victoria Colonist of Nov. 4, contained a cablegram from Glasgow, dated Nov. 3, to the effect that orders had been given to the Fairfield Shipbuilding Co. by the Canadian Northern Ry. for the construction of two turbine vessels to steam 20 knots. It also stated that the orders were given by D. B. Hanna, Vice President, Canadian Northern Ry., Toronto. On enquiry at the Canadian Northern Ry. offices, we have been informed that Mr. Hanna has placed no such orders, nor does he know of any such orders having been placed.

Raising Wrecked Atlantic Liners by Compressed Air.

The use of compressed air in raising and repairing sunken vessels has been employed very extensively, either in floating caissons, or "camels," attached to the ship, or by converting part of the ship itself into a pneumatic caisson. An exceptionally important piece of work done in the latter manner was the raising of the Canadian Northern Steamships, Ltd., Atlantic liner Royal George in the St. Lawrence River. A specially interesting feature of this work was that the hull when raised was repaired under air pressure while floating in the river (instead of going into drydock). By this means the vessel was enabled to take cargo and cross the Atlantic to have permanent repairs made at its home port.

The Royal George is 545 ft. long and 60 ft. beam, with a registered tonnage of 12,000 tons; it is driven by triple screws and steam turbines, developing a total of 18,000 h.p. and giving a speed of about 20 knots. On Nov. 6, 1912, while on its last voyage of the season to Montreal (before the closing of the river by ice) it went ashore at high tide about nine miles below Quebec. Passengers and cargo were discharged and attempts made to pump out the flooded compartments of the hull. The following description of the salvage work as finally accomplished is condensed from an article by H. G. Sperrett:

After nearly [illegible] it was recognized that the usual salvage procedure would not answer, and W. W. Wotherspoon was summoned from his work on a nearby wreck, the stranded steamer [illegible]. Upon [illegible] he was using compressed air, and the underwriters decided to have him try the same method upon the Royal George.

The pumps were removed and the hatches in the flooded compartments sealed by air tight plates. Air locks were secured to circular passageways in the hatch covers, and connections were made by pipe between the air compressors and the injured holds. In three days this work was completed.

It was necessary to provide against the pressure of a head of water of [illegible] ft., and the deck covering the compartment was not equal to a lifting stress of this magnitude. Above all, the deck planking did not rest upon a solid steel deck, and there was risk of breaking out the calking between the planks, which would mean failure. To meet the situation, hot pitch was poured into all the deck seams, the deck covered with a number of layers of tar paper, and over these placed a course of spruce flooring. Then this pressure deck was braced by shores reaching to the deck above, so as to distribute the stress when the holds should be filled with compressed air. In brief, it turned the flooded cargo spaces into caissons, and then all was in readiness for the expulsion of the water by forcing in the air under pressure. The compressors started at 10 p.m. of Nov. 22, and 15 minutes later the forward cargo space was dry.

An internal examination of the injured holds showed that nearly 40% of the ship's bottom was damaged, but it also demonstrated that the salvage method was equal to the demands to be placed upon it. The next afternoon, two hours before high tide, the water was blown out from the flooded compartments and the vessel floated clear.

Then came the question of repairing the badly damaged hull. The nearest drydock was at Montreal, 140 miles away, and the river's closed season was drawing near. Besides the liability of having the ship held for months, there was the prospect of heavy dock charges, independently of the cost of repairs. The question was how could the Royal George be made ready for sea without going into drydock? Mr. Wotherspoon answered this in a unique and satisfactory manner.

The ship was anchored in deep water, and into the damaged spaces men were sent through the air locks, the compartments being held substantially drained by reason of the compressed air within them. Beginning at the uppermost point of the rents in the hull, the men roughly sealed these openings by covering them with heavy planking calked with mud and oakum, the water [illegible] the pudge board [illegible] downward and finally covered the openings. This sealing was but temporary, and effective only so long as the air pressure was maintained. Before the vessel could proceed seaward it would be necessary to cover the damaged bottom from without with steel plates made water tight.

From within the hull, flexible templates of wood were made of each needed patch, and upon these were marked the places for bolt holes, the same positions being indicated upon the inner surface of the vessel's plating. The templates were sent up through the air locks and guided the steel workers in forming the steel patch plates and in boring the threaded bolt holes. Into these holes tap bolts were screwed. In the meantime, slightly larger holes were drilled around each wound in the hull, and made tight with wooden plugs from within.

A weighted platform was swung under the ship directly beneath the rents to be mended, and a diver took his place upon this submerged platform. When each patch was ready, with its tap bolts in place, it was lowered to the diver, who directed it into position, the men inside withdrawing the wooden plugs so that the bolts could enter their proper holes. Then nuts and washers, with plenty of red lead, were placed upon the bolts and screwed well home in order to make the patch plate snug and water tight.

With this done, the temporary inside pudge boards were removed, and the ragged edges of the damaged hull were cut away by means of oxy acetylene torches. In this manner all of the repairs were effected, and the total damage covered an area of 700 sq. ft. The Royal George left the St. Lawrence for Halifax, and on the way encountered heavy weather, but the repairs proved quite equal to the stress placed upon them. At Halifax, because of the novelty of the work and to satisfy the insurance people, the liner was docked for a brief examination. Everything being found in excellent shape, the Royal George loaded with cargo and returned to England without further mishap.

Another somewhat similar work was done by Mr. Wotherspoon early this year. The transatlantic steamship Uranium, 5,180 tons, went ashore at Chebucto Head, N.S., on Jan. 12, and after being floated was taken to Halifax for repair. The drydock, however, was occupied by another steamer, and would not be available until March. To avoid the delay, the rents in the hull were patched while the damaged compartments were filled with compressed air, the ship being practically a floating caisson. Men entered the air locks and made templates for the patch plates and bolt holes, and drilled the necessary holes. The plates (with tap bolts inserted) were lowered outside the hull, and guided into place by a diver standing on a submerged platform; the bolts were entered into the proper holes, and nuts and washers applied by the men on the inside. The ship was then able to proceed to New York.

Sight Tests in the Mercantile Marine Service.—The British Board of Trade has modified its standard of sight tests required of candidates for certificates of competency from Jan. 1, 1914. Under the new standard a candidate will only be required to possess normal vision when using both eyes together, or, at his option, either eye separately. It has also decided that a candidate who already holds a certificate of competency of any grade and who presents himself for a higher certificate shall not be required to undergo any color test, and officers who hold certificates of competency, presenting themselves voluntarily for sight tests, should be confined to the form vision tests.

The Bronson Co., Ottawa, which owns, among other properties and franchises, the charter of the Quinze and Blanche River Ry., is applying to the Dominion Parliament for authority to borrow additional sums for the development of its several undertakings.

Rules of the Road on the Great Lakes

The Dominion Government is proposing to amend the Rules of the Road for navigation on the Great Lakes. The chief amendments cover the use of lights on vessels, a new clause being proposed requiring canal boats, when in tow of steam vessels on the Great Lakes and tributary waters as far east as Montreal, to carry lights. A new rule is also proposed relating to the use of searchlights, and providing that any master or pilot of any steam vessel who shall flash or cause to be flashed, the rays of a searchlight into the pilot house of a passing vessel shall be deemed guilty of misconduct, and shall be liable to have his certificate suspended or revoked. Other rules govern the use of fog and distress signals, speed during fog, and in case of accident. Special rules are to be included, governing the navigation of motor boats, and as, in several cases recently, the navigation of such craft by inexperienced persons has caused considerable danger, and in some cases, loss of life, these rules should be well studied by all those concerned with navigation, especially when in the vicinity of harbors and small bays.

Extension of Wharves at Fort William, Ont.

The Dominion Public Works Department received tenders, Nov. 21, for harbor and river improvements, consisting of the extension of wharves at the entrance to the Mission River, Fort William. The work covers the construction of quay walls of 2,646 ft. total length, in two parts, of 1,225 ft. and 1,421 ft. respectively. The construction is to be of square timber crib work, close faced on the outer faces and open faced on the inner faces, the outer faces to have a batter of 1 in 24, and the other faces to be vertical. When fully ballasted the top of the cribwork is to be 6 ins. below low water level. The superstructure is to be of concrete and when completed to be 5.5 ft. above low water level. The site will be dredged by the Public Works Department to a depth of 26 ft. at low water.

New Atlantic Steamships for the Canadian Pacific Railway.

The two steamships which the C.P.R. has under construction at Glasgow, Scotland, and which will be in service during next year, will be of the one class cabin type. Their dimensions will be, length 520 ft., breadth 64 ft., breadth of passenger deck 41 ft. Each vessel will have passenger accommodation for 520 second class, and 1,200 third class passengers. The dead weight capacity will be 7,950 tons, with an approximate cargo capacity of 6,000 tons. The cruiser stern, which is one of the features of the new Pacific Empresses, has been adopted. There will be six decks, and the hulls will be subdivided by water-tight doors and bulkheads so as to be capable of floating when three of the compartments are open. These bulkheads will be automatically controlled from the bridge. The speed of the vessels will be 15 knots, and they will have a draught of 27.5 ft. All conveniences will be included in the passenger accommodation, and heating and ventilation will be supplied by the thermotank system, changing the air eight times an hour.

Diesel Locomotive.—A locomotive of the 4-4-4 type operated by Diesel oil engines has recently been placed in service on the Prussian-Hessian State Rys. It is 54½ ft. long, weighing in working order 95 tons. The engines are of the 4 cylinder V type, and drive a crank [illegible] to the driving axle. [illegible] pendent air comp[illegible] the power of the main [illegible] which is used for starting the locomotive. The cylinders each have a fuel valve through which the oil is injected under a pressure of from 50 to 70 [illegible] The cab encloses the entire locomotive, and the fuel and circulating water are contained in four tanks built into the corners. The reversing and other mechanism is so arranged that the locomotive can be controlled from either end. The auxiliary is started by the admission of air from the reservoir, slowly at first, and after the auxiliary has been changed to oil fuel, the pressure in the oil storage cylinders rises, and the air supply is admitted to the main engine, which consequently commences to work. When running at about 6 m. p. h., the starting valves are thrown out of action, and the engine is changed to oil fuel, and the operation is then normal. The locomotive was designed for fast passenger service, and has developed 62 m. p. h.

Transportation Conventions in 1913 and 1914

Dec. 9, 10.—Association of Transportation and Car Accounting Officers, Galveston, Texas.

Jan. 20-22.—American Wood Preservers' Association, New Orleans, La.

Mar. 17-20.—American Railway [illegible] Association, Chicago, Ill.

Apr. 21.—American Association of Freight Agents, Houston, Texas.

May.—Association of Railway Claims Agents, St. Paul, Minn.

May 17-20.—American Railway Engineering Association, Chicago, Ill.

May 18-22.—International Railway Fuel Association, Chicago, Ill.

May 19.—American Association of Demurrage Officers, St. Louis, Mo.

May 20-22.—Freight Claim Association, Galveston, Texas.

May 20-23.—Association of Railway Telegraph Superintendents, New Orleans, La.

May 21-22.—American Association of Railroad Superintendents, St. Louis, Mo.

May 28.—Association of American Railway Accounting Officers, Atlantic City, N.J.

June 10-12.—Master Car Builders' Association, Atlantic City, N.J.

June 15-17.—American Railway Master Mechanics' Association, Atlantic City, N.J.

July.—International Railway General Foremen's Association, Chicago, Ill.

Aug. 18.—International Railroad Master Blacksmiths' Association.

Sept. 8-11.—Roadmasters and Maintenance of Way Association, Chicago, Ill.

Oct. 20-22.—American Railway Bridge and Building Association, Los Angeles, Cal.

Greater Safety at Sea. An international conference of those interested in the matter of safer navigation at sea, was opened in London, Eng., Nov. 12, on the invitation of the British Government. The chief nations of the world were represented, and a number of matters were discussed, and full use was made of information and ideas gleaned from the Titanic investigation. Lord Mersey, who conducted the investigation into the Titanic disaster, was Chairman of the conference. Canada was represented by Alex. Johnston, Deputy Minister of Marine.

Harbor Improvements at Port Hope, Ont.—The Public Works Department has under consideration, tenders for harbor improvement works at Port Hope, Ont., comprising the preparation of the site by dredging and excavating material to an elevation of 227.8, or 17 ft. below zero, the construction of a reverment wall consisting of seven wooden, stone filled cribs each 16 ft. wide, and 16 ft. deep, six of which are to be 100 ft. long, and one 45 ft. long with an upper structure of concrete to an elevation of 250.8, or 6 ft. above zero, with walings, bollards, anchor rods, blocks, etc.

The Canadian Northern Telegraph Co. has opened offices at Dinsmore and Elrose, Sask.

Trade and Supply Notes.

[illegible]

Canadian General Electric Co. has issued a folder on the advance in transportation [illegible]

Canadian Steel Foundries Ltd. has issued illustrated catalogue 6 of the Jackson rigid switch stand.

Commercial Acetylene Railway Light and Signal Co.—W. H. Wood has been appointed Canadian Manager, vice J. R. Arnoldi, deceased. Office, 103 Bay St., Toronto.

Canadian Allis-Chalmers Ltd. is distributing McKiernan-Terry Drill Co.'s booklet of rotating hammer drills for sinking, stoping and drifting, for which it is selling agent in Canada.

Orenstein-Arthur Koppel Co., Koppel, Pa., has issued illustrated catalogue 900 of portable and industrial railways, narrow gauge sidings, narrow gauge public railways and general railways equipment. The company is represented in Canada by the Canadian Fairbanks Morse Co., Ltd.

United States Light and Heating Co.—J. Allen Smith, President, left New York recently for Europe for the second time this year, among other things to attend several automobile shows and to deal with the company's business in electric starters and lighters, storage batteries and electric car lighting equipment.

The Hull Iron and Steel Foundries, Ltd., has been incorporated under the Dominion Companies Act with $250,000 capital and office at Hull, Que., to carry on the business of iron smelters and brass and steel founders, and to take over the business being carried on in Ottawa, Ont., by A. H. Coplan.

C. E. A. Carr, who has occupied a number of important positions on electric railways, etc., in Canada and the United States, the last one being the General Managership of the New Orleans, Southern and Grand Isle Ry., at New Orleans, La., has established the C. E. A. Carr Co., at Toronto, to deal in railway supplies.

Ottawa Car Manufacturing Co., Ltd., which was incorporated recently under the Dominion Companies Act with an authorized capital of $3,000,000, and head office at Ottawa, was organized November 10 with the following directors. T Ahearn, President; W. Y. Soper, Vice President; Jas. D. Fraser, Secretary-Treasurer; Travers Lewis, K.C., C. MacNab, E. N. Soper, and T. F. Ahearn. The company will take over the business of the Ottawa Car Co., Ltd., builders of electric railway cars, etc.

The W. W. Butler Co., Ltd., has been incorporated under the Dominion Companies Act, with an authorized capital of $100,000 and head office in Montreal, and with extensive powers. At first the company will handle railway, marine and mining supplies. W. R. Butler, Vice President, Canadian Car and Foundry Co., is the chief man in the new company, and has appointed as one of its representatives G. T. Merwin, formerly with the Safety Car Heating and Lighting Co. and the Canada Car Co.

Armstrong, Whitworth of Canada, Ltd., has been incorporated under the Dominion Companies Act with an authorized capital of $2,000,000 and head office at Montreal, the principal persons interested being connected with Sir W. G. Armstrong, Whitworth & Co., shipbuilders, ordnance manufacturers, etc., in England. M. J. Butler, formerly General Manager, Dominion Iron and Steel Co., is one of the directors and will manage the business. The company is building a plant on the north side of the St. Lawrence, opposite Montreal, for manufacturing various steel products.

John Millen & Son, Ltd., 321 St. James St., Montreal, are distributing an illustrated booklet issued by Electric Service Supplies Co., Philadelphia, showing latest types of electric railway car equipment, among its principal features being the Keystone car signs, which are being installed on the Montreal Tramway Co.'s cars; the automotoneer, which is in use on several Canadian lines, Keystone steel gear cases, the newest development in headlights, air valves and fittings, counting and registering fare boxes. They are also distributing a folder on snow fighting and winter equipment.

Pay-as-you-Enter Car Patents.—T. W. Casey, President Prepayment Car Sales Co., New York, has issued the following circular:—"The Ross & McDonald pay-as-you-enter basic patent 800,176 has just been sustained at New York City, before Judge Holt, in the U.S. Court for the Southern District of New York, and the royalty of $100 per car established. This decision, while upholding the company's right to be compensated for the admitted benefits which its inventions have brought in car design, is of prime importance to the entire street railway industry and to the public, as it will insure the proper application of the prepayment principle based upon the widespread experience of the inventor company."

The Canadian General Electric Co., Ltd., has received a contract for the electrical equipment for the floating dry dock which the Grand Trunk Pacific Ry. is building at Prince Rupert, B.C. It includes two 200 h.p. and four 100 h.p. variable speed induction motors, with full automatic control, for operating the pumps on the dock. The power will be produced by two 1250 k.v.a. Curtis steam turbines with complete condensing apparatus. The exciters for the main turbine generators will consist of three 35 k.w. turbine driven generators and one motor generator set. The foundry, machine shops and shipyards will be equipped with motor driven tools, requiring motors ranging from 60 to 10 h.p. The contract also includes all necessary power and light transformers.

Transportation Associations, Clubs, Etc.

The names of persons given below are those of the secretaries.

Canadian Car Service Bureau. J. Reilly (acting), 401 St. Nicholas Building, Montreal.

Canadian Electric Railway Association, Acton Burrows, 70 Bond Street, Toronto.

Canadian Freight Association (Eastern Lines), G. C. Ransom, Canadian Express Building, Montreal.

Canadian Freight Association (Western Lines), W. E. Campbell, 502 Canada Building, Winnipeg.

Canadian Railway Club, J. Powell, St. Lambert, Que. Meetings at Montreal, 2nd Tuesday each month, 8.30 p.m., except June, July and August.

Canadian Society of Civil Engineers, C. H. McLeod, 176 Mansfield St. West, Montreal.

Canadian Ticket Agents' Association, E. de la Hooke, London, Ont.

Central Railway and Engineering Club of Canada, C. L. Worth, 409 Union Station, Toronto. Meetings at Toronto 3rd Tuesday each month, except June, July and August.

Dominion Marine Association, Counsel, F. King, Kingston, Ont.

Eastern Canadian Passenger Association, G. H. Webster, 54 Beaver Hall Hill, Montreal.

Engineers' Club of Montreal, R. W. H. Smith, 9 Beaver Hall Square, Montreal.

Engineers' Club of Toronto, R. B. Wolsey, 94 King St. West, Toronto.

Great Lakes and St. Lawrence River Rate Committee, Jas. Morrison, Montreal.

International Water Lines Passenger Association, M. R. Nelson, New York.

Niagara Frontier Summer Rate Committee, Jas. Morrison, Montreal.

Nova Scotia Society of Engineers, A. R. McCleave, Halifax, N.S.

Quebec Transportation Club, J. S. Blanchet, Quebec.

Ship Masters' Association of Canada, Capt. E. Wells, 45 John St., Halifax, N.S.

Ship Masters' Association of Canada, H. O. Jackson, 376 Huron St., Toronto.

Shipping Federation of Canada, T. Robb, 526 Board of Trade, Montreal.

Western Canada Railway Club, W. H. Rosevear, 25½ Princess St., Winnipeg. Meetings at Winnipeg 2nd Monday each month, except June, July and August.

Department of Railways and Canals.

Lachine Canal.

NOTICE TO CONTRACTORS.

Roofing St. Gabriel Shed No. 1.

SEALED TENDERS, addressed to the undersigned and endorsed "Tender for Roofing of St. Gabriel Shed No. 1, Ottawa Street, Lachine Canal," will be received at this office till 12 o'clock noon, Thursday, December 11th, 1913.

Plans, specifications and form of contract to be entered into can be seen on or after this date at the office of the Chief Engineer of the Department of Railways and Canals, Ottawa, and at the office of the Superintending Engineer of the Quebec Canals, New Birks Building, Montreal, Que.

An accepted bank cheque on a chartered bank of Canada for the sum of $500.00 made payable to the order of the Minister of Railways and Canals, must accompany each tender, which sum will be forfeited if the party tendering declines entering into contract for the work, at the rates stated in the offer submitted.

The cheque thus sent in will be returned to the respective contractors whose tenders are not accepted.

The cheque of the successful tenderer will be held as security, or part security, for the due fulfilment of the contract to be entered into.

The lowest or any tender not necessarily accepted.

By order,

L. K. JONES,
Asst. Deputy Minister and Secretary.

Department of Railways and Canals,
Ottawa, 22nd November, 1913.

Newspapers inserting this advertisement without authority from the Department will not be paid for it.—51421.

DRAUGHTSMAN.

Wanted draughtsman, architectural, having technical education and some experience of interior finish, similar to store furnishing, buffet, etc. Apply Box 158, Canadian Railway and Marine World, Toronto.

DRAUGHTSMAN.

Wanted draughtsman with experience on railway cars. Only applications giving experience and salary expected will be considered. Apply Box 158, Canadian Railway and Marine World, Toronto.

CANADIAN PACIFIC RAILWAY.

NOTICE.—The Canadian Pacific Railway Company will apply to the Parliament of Canada, at its next session, for an Act authorizing it to construct the following lines of railway:—

(a) From a point on its Swift Current Southeasterly Branch in Township 14 or 15, in a southwesterly direction to a point in Township 8 or 9, Range 17 or 18, W.3.M., Saskatchewan.

(b) From a point on said Swift Current Southeasterly Branch in Township 12, in a southerly and southwesterly direction to a point in Township 9, Range 16, or 17, W. 3.M., Saskatchewan.

Dated at Montreal, 6th November, 1913.

W. R. BAKER,
Secretary.

Pringle, Thompson & Burgess,
Ottawa agents.

CALGARY & EDMONTON RAILWAY.

NOTICE.—The Calgary & Edmonton Railway Company will apply to the Parliament of Canada, at its next session, for an Act authorizing it to construct the following lines of railway:—

(a) From a point on its McLeod Branch in Township 19, 20 or 21, in a westerly direction to a point on the south branch of Sheep Creek in Range 4, W.5.M., Alberta.

(b) From a point on the line described in paragraph (a) to a point on the north branch of Sheep Creek in Range 2, 3 or 4, W.5.M.

(c) From a point on the line described in paragraph (a) to a point on Trap Creek in Range 6, W.5.M.

Dated at Montreal, 6th November, 1913.

H. C. OSWALD,
Secretary.

Pringle, Thompson & Burgess,
Ottawa, agents.

ESQUIMALT & NANAIMO RAILWAY.

NOTICE.—The Esquimalt & Nanaimo Railway Company will apply to the Parliament of Canada, at its next session, for an Act extending the time within which it may construct the railways which it was authorized to construct by paragraph (a) of section 2 of chapter 92 of the Statutes of 1906, and by section 1 of chapter 92 of the Statutes of 1912, and for other purposes.

Dated at Vancouver, 6th November, 1913.

W. F. SALSBURY,
Secretary.

Pringle, Thompson & Burgess,
Ottawa agents.

CANADIAN PACIFIC RAILWAY COMPANY.

Dividend Notice.

At a meeting of the Board of Directors held today a Dividend of two and one-half per cent. on the Common Stock for the quarter ended 30th September last, being at the rate of seven per cent. per annum from revenue and three per cent. per annum from interest on the proceeds of land sales and from other extraneous assets, was declared payable on 2nd January next to Shareholders of record at 3 p.m. on 1st December next.

By order of the Board.

W. R. BAKER, Secretary.

Montreal, 10th November, 1913.

The C. E. A. Carr Co.

Telephone Main 2986 2 Toronto St., Toronto

RAILWAY SUPPLIES

Reports on Electric Railway and Electric Light Properties. Estimates Prepared.

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